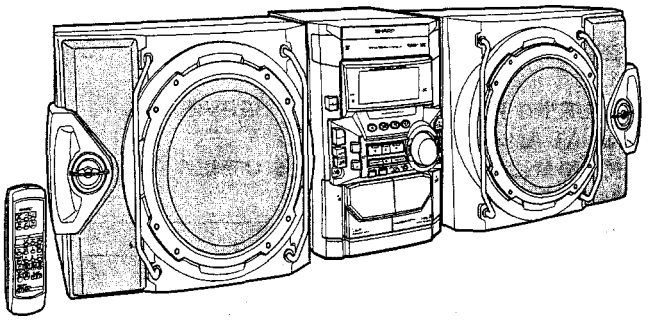
SHARP SERVICE MANUAL

No. S9156CDM4000W



MINI COMPONENT SYSTEM

MODEL CD-M4000W

SPEAKER SYSTEM

MODEL CP-M4000

COMPACT disc DIGITAL AUDIO

CD-R/RW Playable

3 DISC

- In the interests of user-safety the set should be restored to its original condition and only parts identical to those specified be used.

CONTENTS

SHARP CORPORATION

This document has been published to be used for after sales service only.
The contents are subject to change without notice.

SAFETY PRECAUTION FOR SERVICE MANUAL

WARNINGS

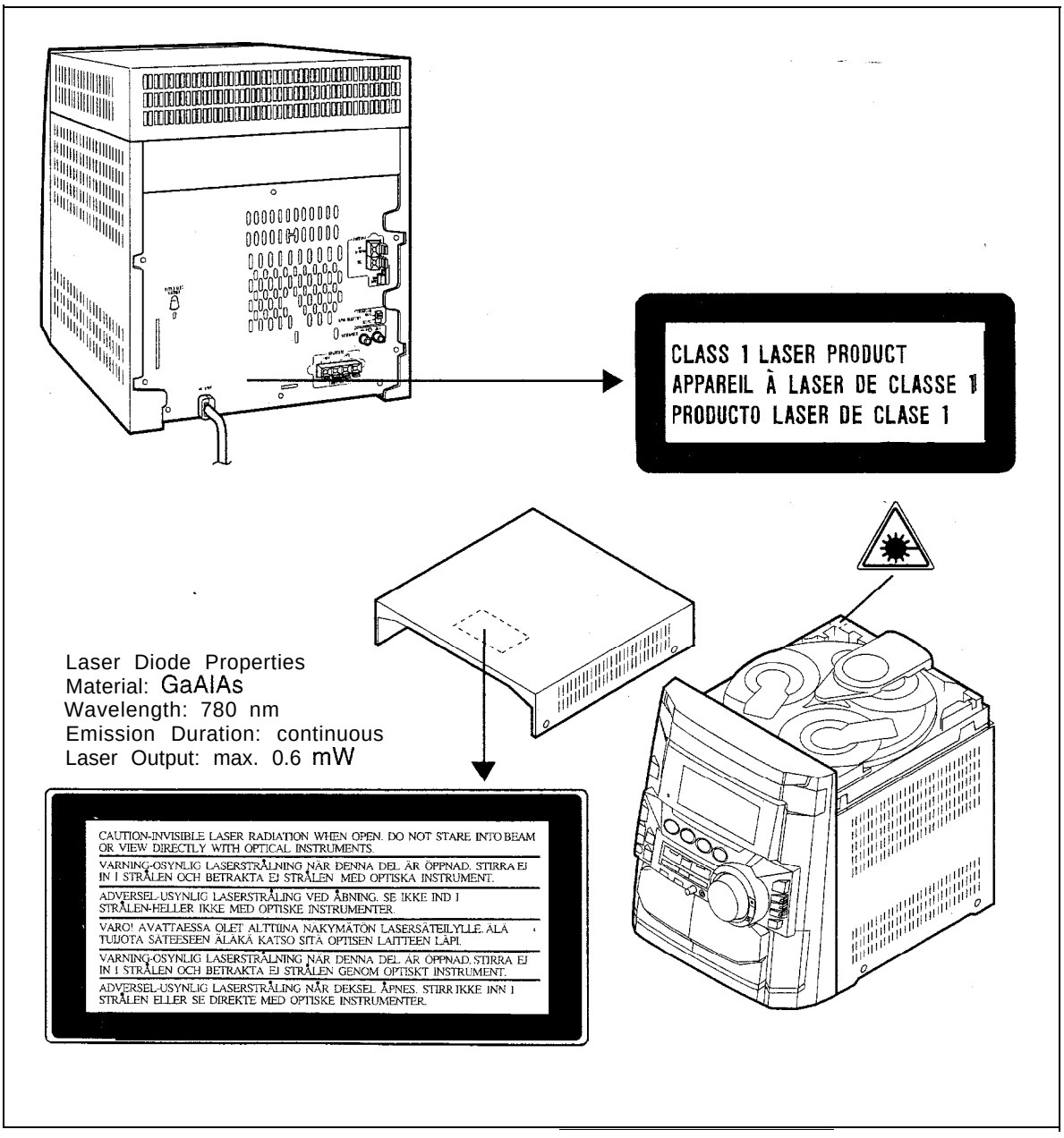
THE AEL (ACCESSIBLE EMISSION LEVEL) OF THE LASER POWER OUTPUT IS LESS THAN CLASS 1 BUT THE LASER COMPONENT IS CAPABLE OF EMITTING RADIATION EXCEEDING THE LIMIT FOR CLASS 1. THEREFORE IT IS IMPORTANT THAT THE FOLLOWING PRECAUTIONS ARE OBSERVED DURING SERVICING TO PROTECT YOUR EYES AGAINST EXPOSURE TO THE LASER BEAM.

1-WHEN THE CABINET IS REMOVED, THE POWER IS TURNED ON WITHOUT A COMPACT DISC IN POSITION AND THE PICKUP IS ON THE OUTER EDGE THE LASER WILL LIGHT FOR SEVERAL SECONDS TO DETECT A DISC. DO NOT LOOK INTO THE PICKUP LENS.

2-THE LASER POWER OUTPUT OF THE PICKUP UNIT AND REPLACEMENT SERVICE PARTS ARE ALL FACTORY PRESET BEFORE SHIPMENT.
DO NOT ATTEMPT TO READJUST THE LASER PICKUP UNIT DURING REPLACEMENT OR SERVICING.

3-UNDER NO CIRCUMSTANCES STARE INTO THE PICKUP LENS AT ANY TIME.

4-CAUTION-USE OF CONTROLS OR ADJUSTMENTS, OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.



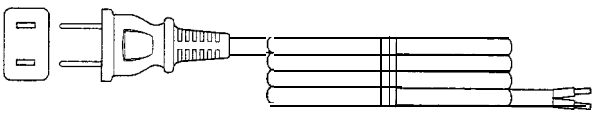
VOLTAGE SELECTION

Before operating the unit on mains, check the preset voltage. If the voltage is different from your local voltage, adjust the voltage as follows.

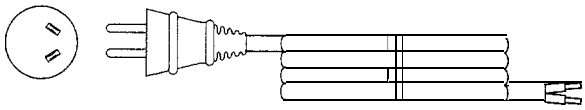
Turn the selector with a screwdriver until the appropriate voltage number appears in the window (110 V, 127 V, 220 V or 230 V-240 V AC).

AC POWER SUPPLY CORD AND AC PLUG ADAPTOR

QACCA0003AW00

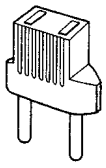


QACCL0005AW00

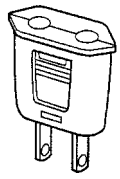


QACCE0008AW00

QPLGA0003AWZZ



QPLGA0004AWZZ



FOR A COMPLETE DESCRIPTION OF THE OPERATION OF THIS UNIT, PLEASE REFER TO THE OPERATION MANUAL.

SPECIFICATIONS

CD-M4000W

■ General

Power source	AC 110/127/220/230 - 240 V, 50/60 Hz
Power consumption	120 W
Dimensions	Width: 270 mm (10-5/8") Height: 330 mm (13") Depth: 372 mm (14-11/16")
Weight	9.4 kg (20.7 lbs.)

■ Amplifier

Output power	MPO: 520 W (260 W + 260 W) (10 % T.H.D.) RMS: 300 W (150 W + 150 W) (10 % T.H.D.) RMS: 244 W (122 W + 122 W) (0.9 % T.H.D.)
Output terminals	Speakers: 6 ohms Headphones: 16 - 50 ohms (recommended: 32 ohms)
Input terminals	Video/Auxiliary (audio signal): 500 mV/47 kohms Microphone: 1 mV/600 ohms

■ CD player

Type	3-disc multi-play compact disc player
Signal readout	Non-contact, 3-beam semiconductor laser pickup
D/A converter	1-bit D/A converter
Frequency response	20 - 20,000 Hz
Dynamic range	90 dB (1 kHz)

■ Tuner

Frequency range	FM: 88 - 108 MHz AM: 531 1,602 kHz

■ Cassette deck

Frequency response	50 14,000 Hz (Normal tape)
Signal/noise ratio	55 dB (TAPE 1, playback) 50 dB (TAPE 2, recording/playback)
Wow and flutter	0.3 % (WRMS)

CP-M4000

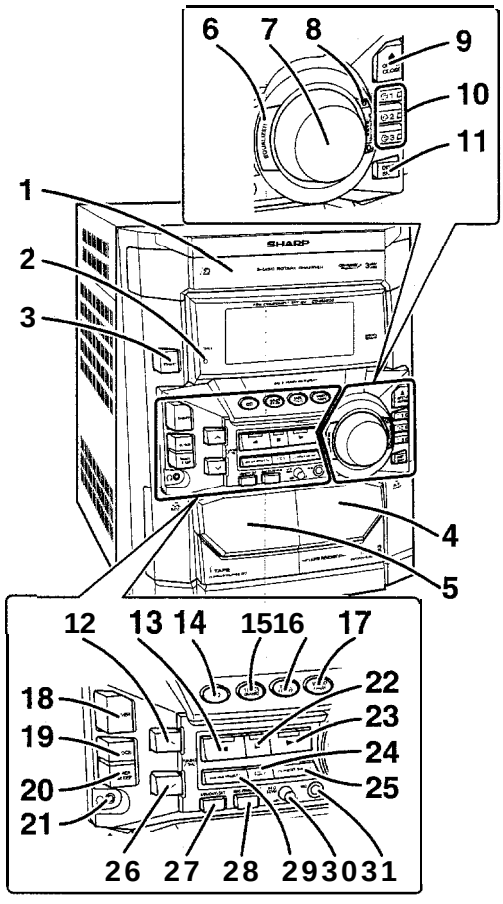
Type	4-way type speaker system Super Tweeter 8 cm (3-1/8") Tweeter 8 cm (3-1/8") Midrange 25 cm (10") Woofer
Maximum input power (Total)	300 W
Rated input power (Total)	150 W
Impedance	6 ohms
Dimensions	Width: 422 mm (16-5/8") Height: 330 mm (13") Depth: 306 mm (12-1/16")
Weight	8.5 kg (18.7 lbs.)/each

Specifications for this model are subject to change without prior notice.

NAMES OF PARTS

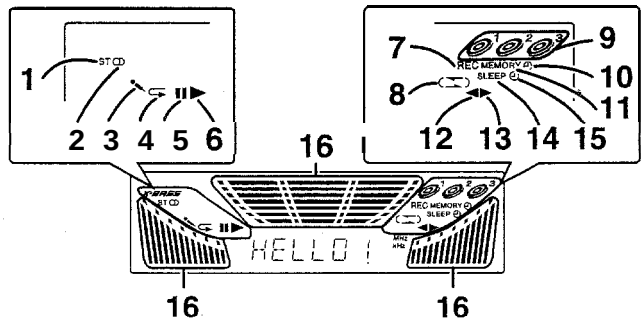
CD-M4000W

■ Front panel



1. Disc Tray
2. Timer Set Indicator
3. On/Stand-by Button
4. Tape 2 Cassette Compartment
5. Tape 1 Cassette Compartment
6. Equalizer Mode Select Button
7. Volume Control
8. Monster Bass/Demo Mode Button (with Indicator)
9. Disc Tray Open/Close Button
10. Disc Number Select Buttons (with indicator)
11. Disc Skip Button
12. Tuning and Time Up Button
13. Tape 2 Reverse Play Button (with Indicator)
14. CD Button
15. Tuner (Band) Button
16. Tape (1 – 2) Button
17. Video/Auxiliary Button
18. Dimmer Button
19. Clock Button
20. Timer/Sleep Button
21. Headphone Socket
22. CD or Tape Stop Button (with indicator)
23. CD Play or Repeat, Tape 1 Play, Tape 2 Forward Play Button (with Indicator)
24. Tape 2 Reverse Mode Select Button
25. CD Track Up or Fast Forward, Tape 2 Fast Wind, Tuner Preset Up Button
26. Tuning and Time Down Button
27. Memory/Set Button
28. Tape 2 Record Pause Button
29. CD Track Down or Fast Reverse, Tape 2 Fast Wind, Tuner Preset Down Button
30. Microphone Level Control
31. Microphone Socket

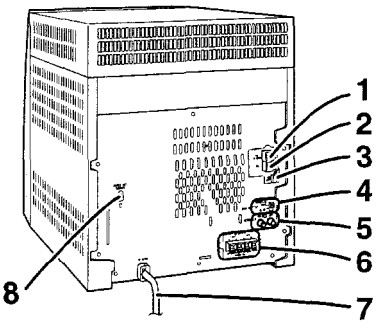
■ Display



1. FM Stereo Mode Indicator
2. FM Stereo Receiving Indicator
3. Karaoke Mode Indicator
4. CD Repeat Play Indicator
5. CD Pause Indicator
6. CD Play Indicator
7. Tape 2 Record Indicator
8. Tape Reverse Mode Indicator
9. Disc Number Indicators
10. Timer Play Indicator
11. Memory Indicator
12. Tape 2 Reverse Play Indicator
13. Tape 1 Play or Tape 2 Forward Play Indicator
14. Sleep Indicator
15. Timer Recording Indicator
16. Spectrum Analyser/Volume Level Indicator

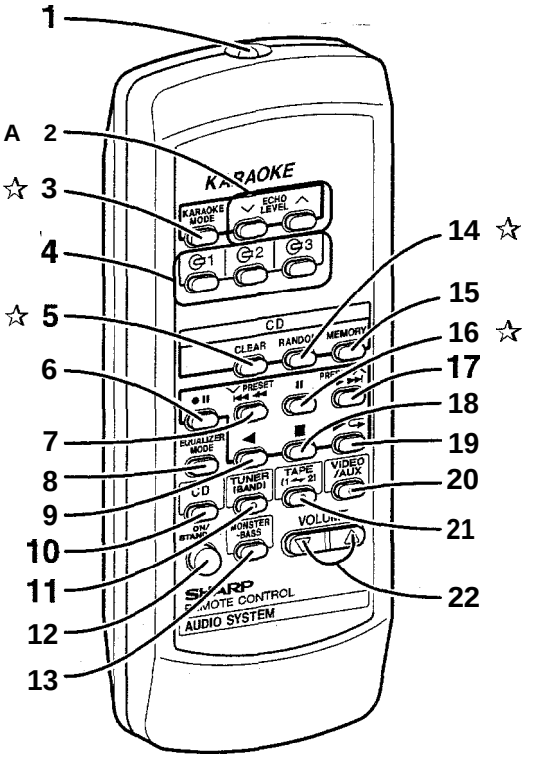
CD-M4000W

■ Rear panel



1. **FM 75 Ohms Aerial Terminal**
2. **FM Aerial Earth Terminal**
3. **AM Loop Aerial Socket**
4. **Span Selector Switch**
5. **Video/Auxiliary (Audio Signal) Input Sockets**
6. **Speaker Terminals**
7. **AC Power Lead**
8. **AC Voltage Selector**

■ Remote control

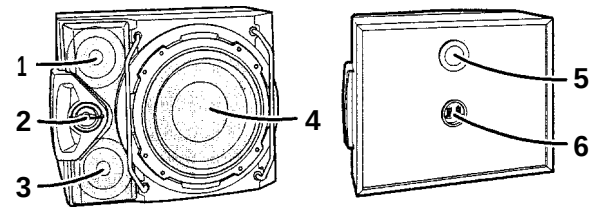


1. Remote Control Transmitter
2. **Echo Level Up and Down Buttons**
3. **Karaoke Mode Button**
4. Disc Number Select Buttons
5. **CD Clear Button**
6. Tape 2 Record Pause Button
7. CD Track Down or Fast Reverse, Tape 2 Fast Wind, Tuner Preset Down Button
8. Equalizer Mode Select Button
9. Tape 2 Reverse Play Button
10. CD Button
11. Tuner (Band) Button
12. On/Stand-by Button
13. Monster Bass Button
14. **CD Random Button**
15. CD Memory Button
16. **CD Pause Button**
17. CD Track Up or Fast Forward, Tape 2 Fast Wind, Tuner Preset Up Button
18. CD or Tape Stop Button
19. CD Play or Repeat, Tape 1 Play, Tape 2 Forward Play Button
20. Video/Auxiliary Button
21. Tape (1 ⇄ 2) Button
22. Volume Up and Down-Buttons

Buttons with "☆" mark in the illustration can be operated on the remote control only.
Other buttons can be operated both on the main unit and the remote control.

■ Speaker system

1. Tweeter
2. Super Tweeter
3. Midrange
4. Woofer
5. Bass Reflex Duc
6. Speaker Terminals



OPERATION MANUAL

System Connections

■ Setting the AC voltage selector

Check the setting of the AC voltage selector located an the rear panel before plugging the unit into a wall socket. If necessary, adjust the selector to correspond to the AC power voltage used in your area.

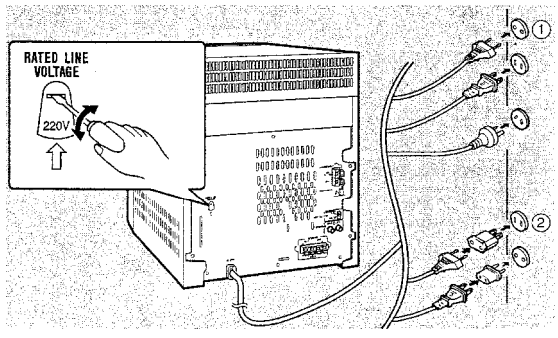
Turn the selector with a screwdriver until the appropriate voltage number appears in the window (110 V, 127 V, 220 V or 230 V - 240 V AC).

❑ Connecting the AC power lead

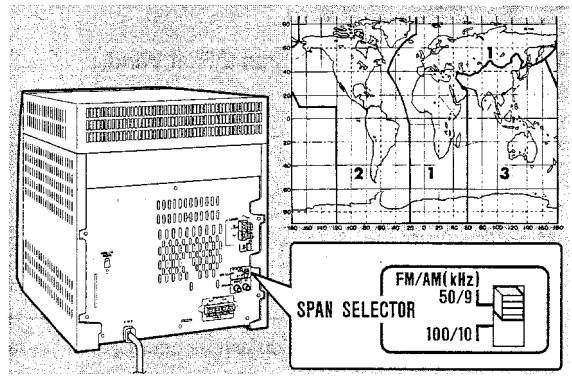
After making all connections, plug the unit. If you plug the unit first, the unit will enter the demonstration mode.

Note:
Unplug the AC power lea&from the wall socket if the unit will not be in use for a prolonged period of time.

AC Plug Adaptor
In areas (or countries) where a wall socket as shown in illustration ② is used, connect the unit using the AC plug adaptor supplied with the unit, as illustrated The AC plug adaptor is not included in areas where the wall socket and AC power plug can be directly connected (see illustration①).



■ Setting the FM/AM span selector



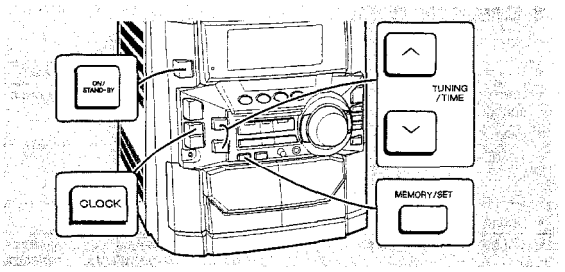
The International TelecommunicationUnion (ITU) has estabiished that member countries should maintain either a 100 kHz or a 50 kHz interval between broadcasting frequencies of FM stations and 10 kHz or 9 kHz for AM station. The illustration shows the 50/9 kHz zones (regions 1 and 3), and the 100/10 kHz zone (region 2)
Before using the unit, set the SPAN SELECTOR switch (on the rear panel) to the interval (span) Of your area

To change the tuning zone:

1 Press the ON/STAN D-B,' button to enter the stand-by mode.
2 Set the SPAN SELECTOR switch (on the rear panel) as follows.
. For 50 kHz FM interval (9 kHz in AM) → 5019
. For 100 kHz FM interval (10 kHz in AM) → 100/10
3 Whilst pressing down the ► button and the MONSTER-BASS button. press the ON, STAND-BY button until "CLEAR AL" appears.

Caution:
This operation will erase all data stored in memory Including clock, timer settings, tuner preset, and CD programme.

Setting the Clock



In this example, the clock is set for the 24-hour (0:00) display.

1 **Press the ON/STAND-BY button to turn the power on.**

2 **Press the CLOCK button and within 5 seconds, press the MEMORY/SET button.**

3 **Press the TUNING/TIME (∨ or ∧) button to select 24-hour or 12-hour display and then press the MEMORY/SET button.**

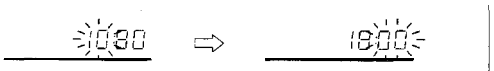
"0:00" → The 24-hour display will appear. (0:00 - 23:59)

"AM 12:00" → The 12-hour display will appear. (AM 12'00 -PM 11:59)

"AM 0:00" → The 12-hour display will appear. (AM 0:00 - PM 11:59)

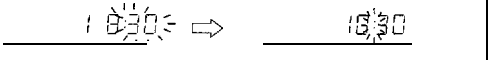
Note that this can only be set when the unit is first installed or it has been reset.

4 **Press the TUNING/TIME (∨ or ∧) button to adjust the hour and then press the MEMORY/SET button.**



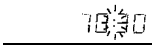
- Press the TUNING/TIME (∨ or ∧) button once to advance the time by 1hour. Hold it down to advance continuously.
- When the 12-hour display is selected, "AM" will change automatically to "PM".

5 **Press the TUNING/TIME (∨ or ∧) button to adjust the minutes and then press the MEMORY/SET button.**



- Press the TUNING/TIME (∨ or ∧) button once to advance the time by 1 minute. Hold it down to change the time in 5-minute intervals.
- The hour will not advance even if minutes advance from "59" to "00"
- The clock begins counting from "0" seconds. (Seconds are not displayed.) The time display will disappear after a few seconds.

To confirm the time display:
Press the CLOCK button.
The time display will appear for about 5 seconds.



Note:
The "CLOCK" or time will flash at the push of the CLOCK button when the AC power supply is restored after a power failure or unplugging the "nit. Readjust the clock as follows.

To readjust the clock:
Perform "Setting the Clock" from the beginning. If the time display is flashing, step 3 (for selecting the 24-hour or 12-hour display) will be skipped.

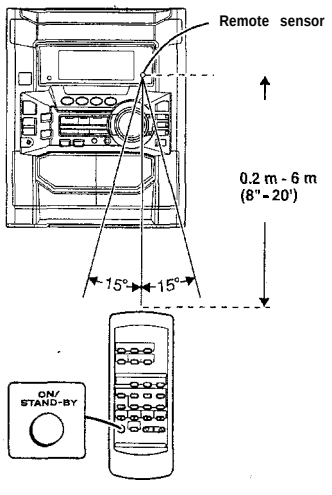
To change the 24-hour or 12-hour display:
1 Clear all the programmed contents.
2 Perform "Setting the Clock" from the beginning.

Remote Control

■ Test of the remote control

Face the remote control directly to the remote sensor on the unit.

The remote control can be used within the range shown below:
Press the ON/STAND-BY button Does the power turn on? Now. you can enjoy the music.



Troubleshooting Chart

Many potential problems can be resolved by the owner without calling a service technician.
If something is wrong with this product, check the following before calling your authorised SHARP dealer or service centre.

■ General

Symptom	Possible cause
. The clock is not on time.	. Did a power failure occur? Reset the clock.
• When a button is pressed, the unit does not respond.	• Set this unit to the power stand-by mode and then turn it back on. • If the unit still malfunctions, reset it.
• No sound is heard.	• Is the volume level set to "0"? • Are the headphones connected? • Are the speaker wires disconnected? . Is the karaoke mode set to "L-CH", "R-CH" or "V-CANCEL"?

■ CD player

Symptom	Possible cause
• Playback does not start.	• Is the disc loaded upside down?
. Playback stops in the middle or is not performed properly.	. Does the disc satisfy the standards? • Is the disc distorted or scratched?
. Playback sounds are skipped, or stopped in the middle of a track.	• Is the unit located near excessive vibra- :?e?discverydlm/, . Has condensation formed inside the unit?

■ Tuner

Symptom	Possible cause
• Radio makes unusual noise consecutively.	• Is the unit placed near the TV or computer? • Is the FM aerial or AM loop aerial placed properly? Move the AC power lead away from the aerial if located near.

■ Cassette deck

Symptom	Possible cause
. Cannot record.	. Is the erase-prevention tab removed?
. Cannot record tracks with proper sound quality.	. is it a normal tape? (You cannot record on a metal or CrO_2 tape.)
• [illegible] completely.	
• Sound skipping.	. Is there any slack?
• Cannot hear treble.	• Is the tape stretched? • Are the capstans, pinch rollers, or heads dirty?
• Sound fluctuation.	
• Cannot remove the tape.	• If a power failure occurs during playback, the heads remain engaged with the tape. Do not open the compartment forcibly. Wait until electricity resumes.

■ Karaoke

Symptom	Possible cause
• The vocal part of a multiplexed disc is not heard.	. Is the karaoke mode set to "L-CH", "R-CH" or "V-CANCEL"?

■ Remote control

Symptom	Possible cause
• The remote control does not operate.	• Is the AC power lead of the unit plugged in? • Is the battery pol[illegible] • Are the batteries dead? • Is the distance or angle incorrect? • Does the remote control sensor receive strong light?

Troubleshooting Chart

■ If trouble occurs

When this product is subjected to strong external interference (mechanical shock, excessive static electricity, abnormal supply voltage due to lightning, etc.) or if it is operated incorrectly, it may malfunction.

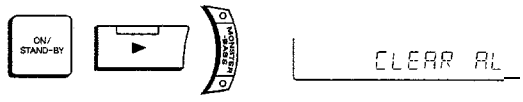
If such a problem occurs, do the following:

1 Set the unit to the stand-by mode and turn the power on again
2 If the unit is not restored in the previous operation, unplug and plug in the unit, and then turn the power on.

Note:
If neither operation above restores the unit, clear all the memory by resetting it

■ Clearing all the memory (reset)

1 Press the ON/STAND-BY button to enter the power stand-by mode.
2 Whilst pressing down the ▶ button and the MONSTER-BASS button, press the ON/STAND-BY button until "CLEAR AL" appears.



Caution:
This operation will erase all data stored in memory including clock, timer settings, tuner preset, and CD programme.

■ Before transporting the unit

1 **Press the ON/STAND-BY button to turn the power on.**
2 **Press the CD button.**
3 Press the ⏏ OPEN/CLOSE button to open the disc tray.
Remove all CDs inserted in the unit.
4 Press the ⏏ OPEN/CLOSE button to **close** the disc tray.
Make sure that "NO DISC" is displayed
5 Press **the ON/STAND-BY** button **to enter the stand-by** mode, and then **unplug** the AC power **lead** from the **wall** socket.

DISASSEMBLY

Caution on Disassembly

Follow the below-mentioned notes when disassembling the unit and reassembling it, to keep it safe and ensure excellent performance:

1. Take cassette tape and compact disc out of the unit.
2. Be sure to remove the power supply plug from the wall outlet before starting to disassemble the unit.
3. Take off nylon bands or wire holders where they need to be removed when disassembling the unit. After servicing the unit, be sure to rearrange the leads where they were before disassembling.
4. Take sufficient care on static electricity of integrated circuits and other circuits when servicing.

CD-M4000W

STEP	REMOVAL	PROCEDURE	FIGURE
1	Top Cabinet	1. Screw ..... (A1) x4	9-1
2	Side Panel (Left/Right)	1. Screw ..... (B1) x8	9-1
3	CD Player Unit/ CD Tray Cover	1. Turn on the power supply, open the disc tray, take out the CD tray cover, and close. (Note 1) 2. Screw ..... (C1) xl 3. Hook.. ..... (C2) x3 4. Hook.. ..... (C3) x2 5. Socket ..... (C4) x2	9-2
4	Rear Panel with Fan Motor	1. Screw ..... (D1) x10 2. Socket ..... (D2) xl	9-2
5	Main PWB	1. Screw ..... (E1) xl 2. Flat Cable.. ..... (E2) xl 3. Socket ..... (E3) x4	9-2 10-2 10-2,10-3
6	Amp. PWB	1. Screw ..... (F1) x7 2. Socket ..... (F2) x2 3. PWB Holder ..... (F3) x3 4. Flat Wire. ..... (F4) xl	10-3 10-2 10-3
7	Front Panel	1. Screw.. ..... (G1) xl 2. Socket ..... (G2) xl 2. Hook.. ..... (G3) x2	10-3
8	Display PWB	1. Knob.. ..... (H1) xl 2. Screw ..... (H2) x12 3. Flat Cable ..... (H3) xl	10-4
9	Tape Mechanism	1. Open the cassette holder. 2. Screw (J1) x5	10-4
10	Headphones PWB	1. Screw:. ..... (K1) xl	10-4
11	Mic PWB	1. Screw.. ..... (L1) x2	10-4
12	Turntable	1. Hook ..... (MI) x2 2. Cover ..... (M2) xl	10-5
13	Disc Tray	1. Turn fully the lock lever in the. arrow direction. 2. While holding the lock lever, rotate the cam gear until the cam gear rib engages with the clamp lever. 3. Push the slide chassis backward to engage the claw with the groove and remove it in the direction of the arrow. ..... (N1) x6	9-3 10-1 10-6
14	CD Servo PWB (Note 2)	1. Screw. ..... (P1) xl 2. Hook ..... (P2) x2 3. Socket ..... (P3) x4	11-1
15	CD Mechanism	1. Hook ..... (Q1) x2 2. Hook ..... (Q2) x3	11-2

Note 1: How to open the changer manually. (Fig. 9-3)

1. In this state, turn fully the lock lever in the arrow direction through the hole on the loading chaissis bottom.
2. While holding the lock lever, rotate the cam gear anticlockwise until the cam gear rib engages with the clamp lever. (Fig.10-1)
3. After that, push forward the slide Chaissis.

CD-M4000W

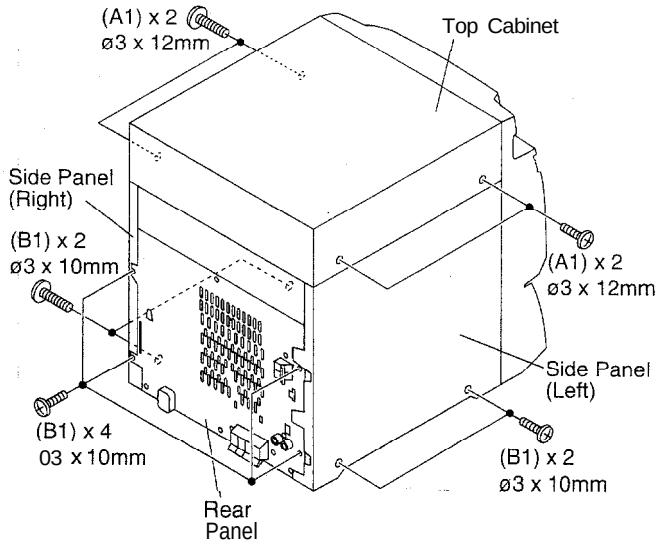


Figure 9-1

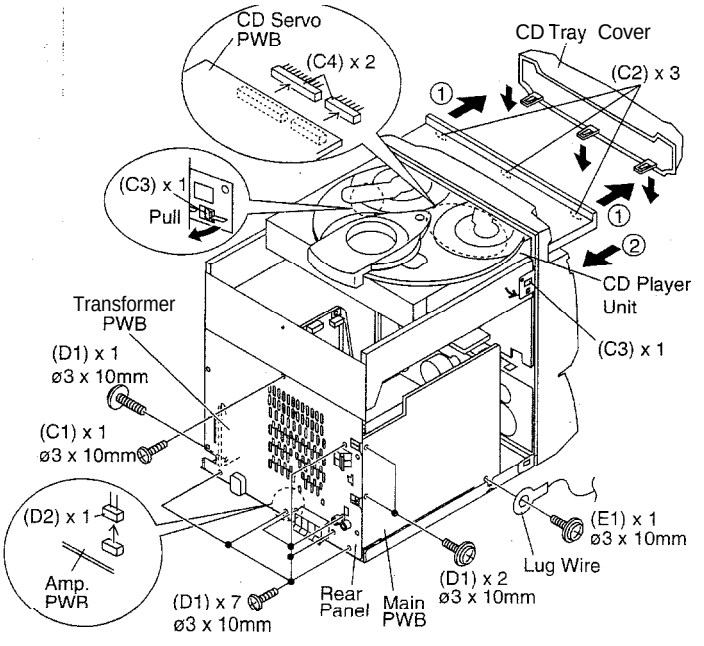


Figure 9-2

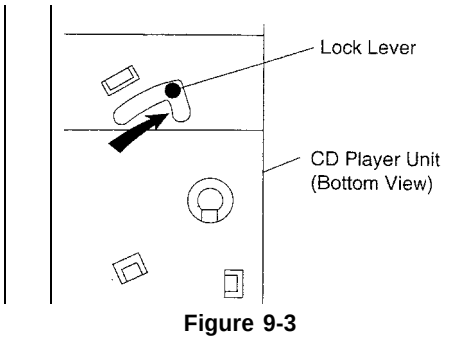


Figure 9-3

Note 2:

1. After removing the connector for the optical pickup from the connector, wrap the conductive aluminium foil around the front end of the connector so as to protect the optical pickup from electro-static damage.

Note 3:

1. Be careful not to break the claw of the CD mechanism.
2. When fining back the cam gear assembly, let it lock by front movement.

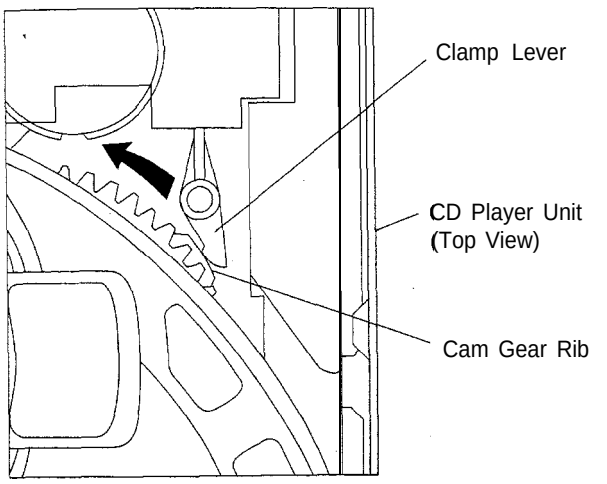


Figure 10-1

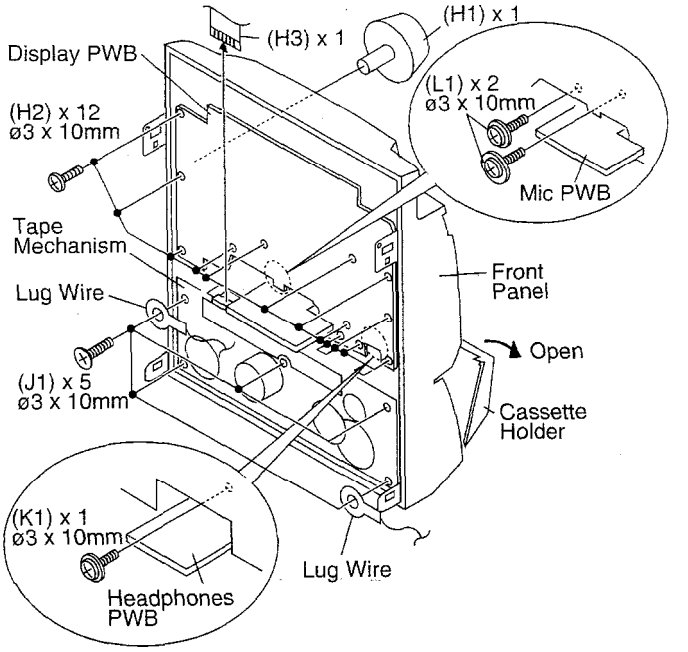


Figure 10-4

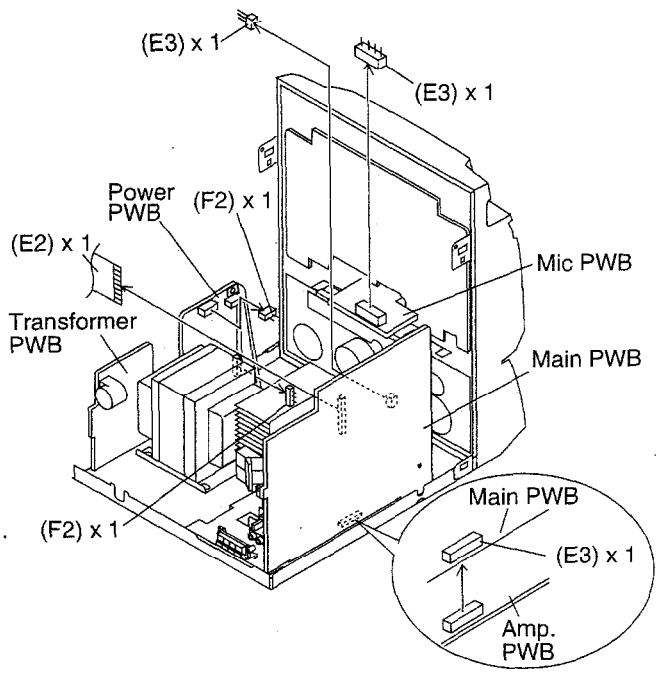


Figure 10-2

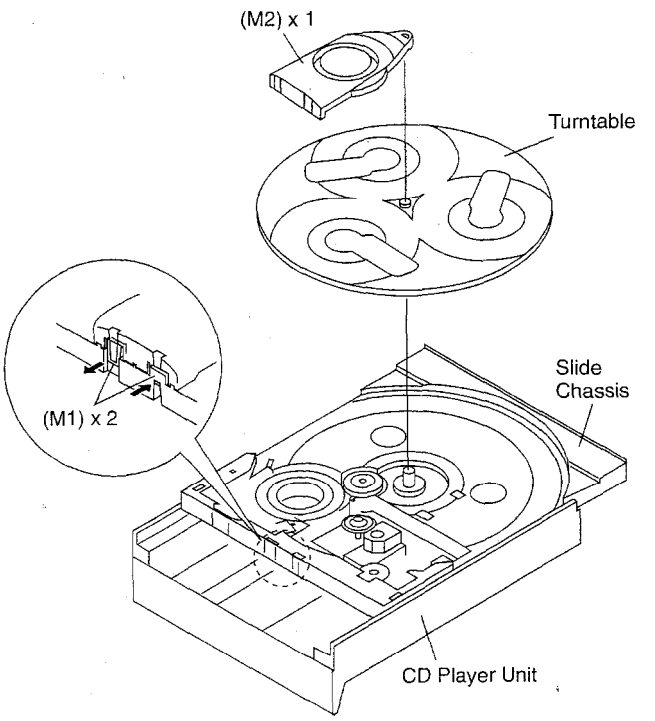


Figure 10-5

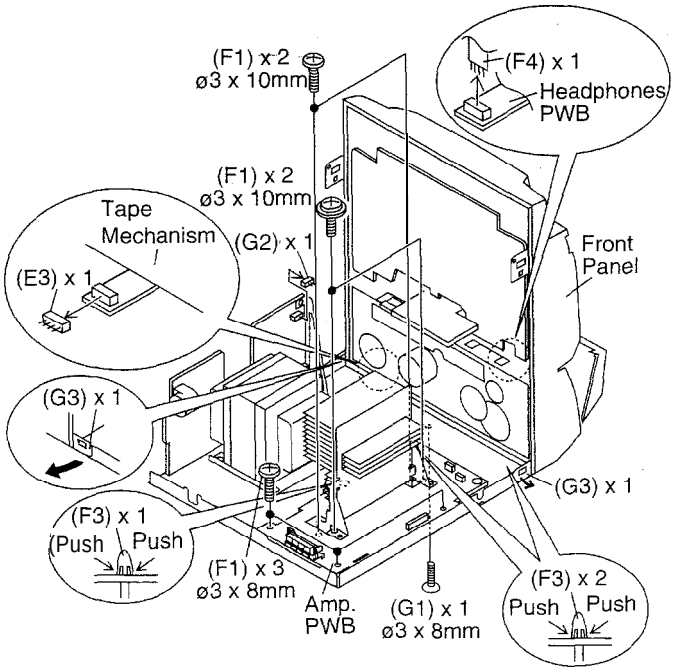


Figure 10-3

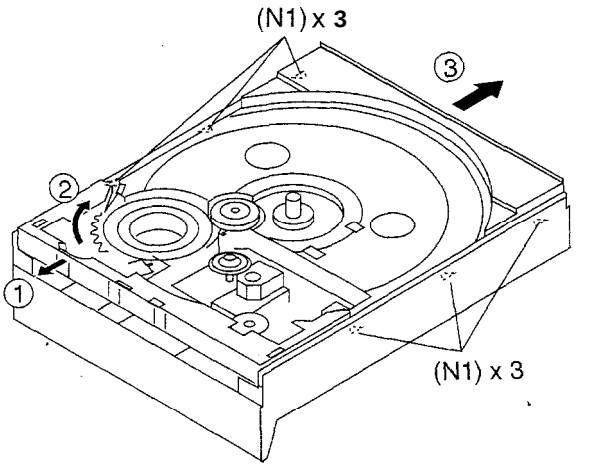


Figure 10-6

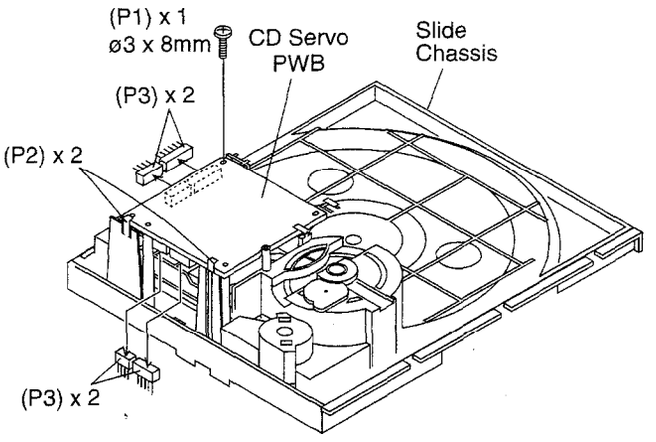


Figure 1 l-l

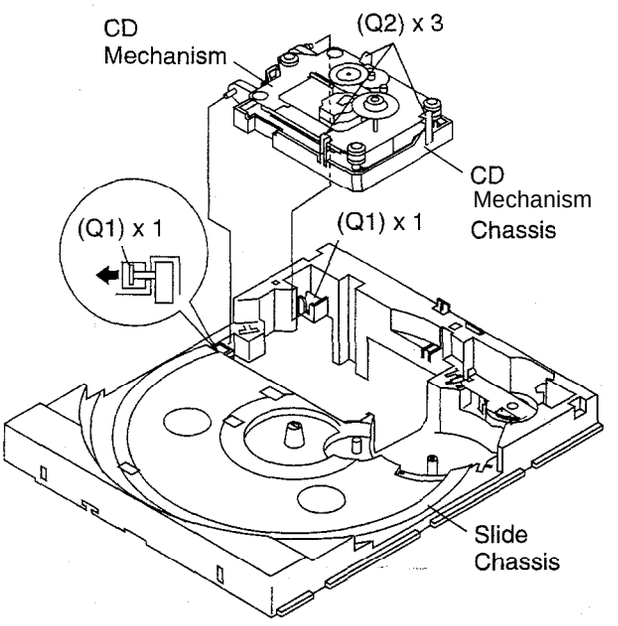


Figure 11-2

CP-M4000

STEP	REMOVAL	PROCEDURE	FIGURE
1	Front Panel	1. Net..... (A1) x1 2. Catching Holder . . . . . (A2) x4 3. Screw ..... (A3) x4	11-3,11-4
2	Super Tweeter	1. Screw ..... (Bl) x2	11-5
3	Woofer	1. Screw ..... (Cl) x4	1 l-5
4	Tweeter	1. Screw ..... (D1) x4	11-5
5	Midrange	1. Screw ..... (El) x4	11-5

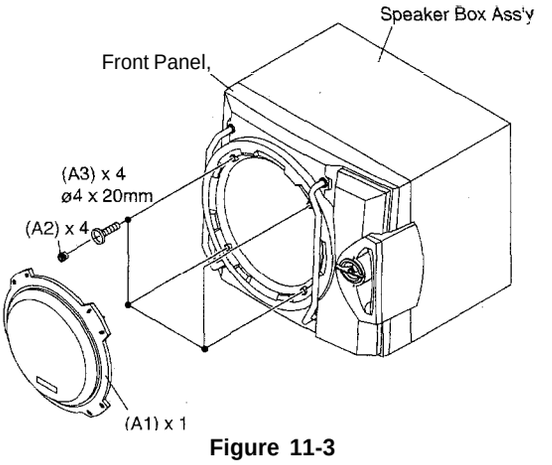


Figure 11-3

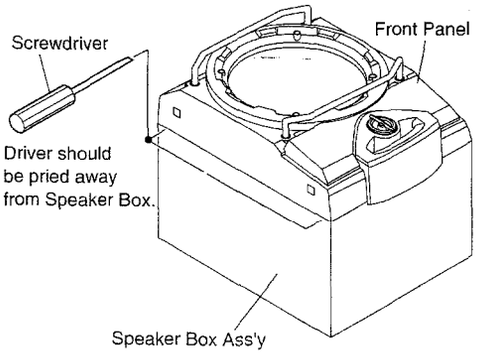


Figure 11-4

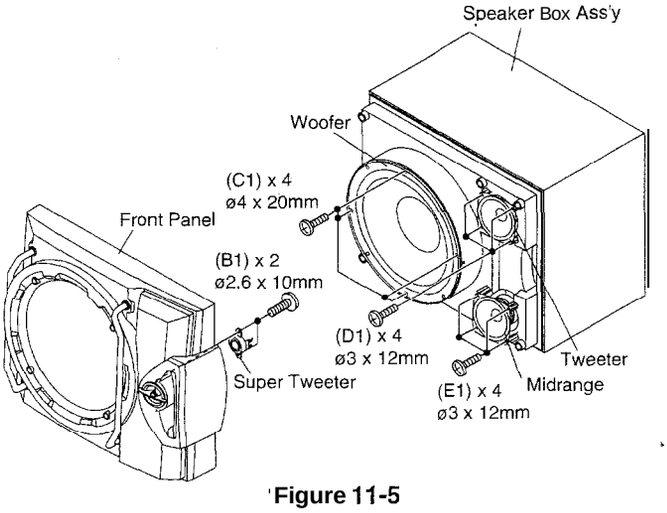


Figure 11-5

REMOVING AND REINSTALLING THE MAIN PARTS

TAPE MECHANISM SECTION

Perform steps 1 to 7 and 9 of the disassembly method to remove the tape mechanism.

How to remove the record/playback and erase heads (TAPE 2) (See Fig. 12-1)

1. When you remove the screws (Al) x 2 pcs., the recording/ playback head and three-dimensional head of the erasing head can be removed.

How to remove the playback head (TAPE 1) (See Fig. 12-2)

1. When you remove the screws (B1) x 2 pcs., the playback head.

How to remove the pinch roller (TAPE 1/2) (See Fig. 12-3)

1. Carefully bend the pinch roller pawl in the direction of the arrow **<A>**, and remove the pinch roller (Cl) x 1pc., in the direction of the arrow **<B>**.

Note:
When installing the pinch roller, pay attention to the spring mounting position.

How to remove the belt (TAPE 2) (See Fig. 12-4)

1. Remove the main belt (D1) x 1 pc., from the motor side
2. Remove the FF/REW belt (D2) x 1 pc.

How to remove the belt (TAPE 1) (See Fig. 12-4)

1. Remove the main belt (El) x 1pc., from the motor side.
2. Remove the FF/REW belt (E2) x 1 pc.

How to remove the motor (See Fig. 12-5)

1. Remove the screws (F1) x 2 pcs., to remove the motor.

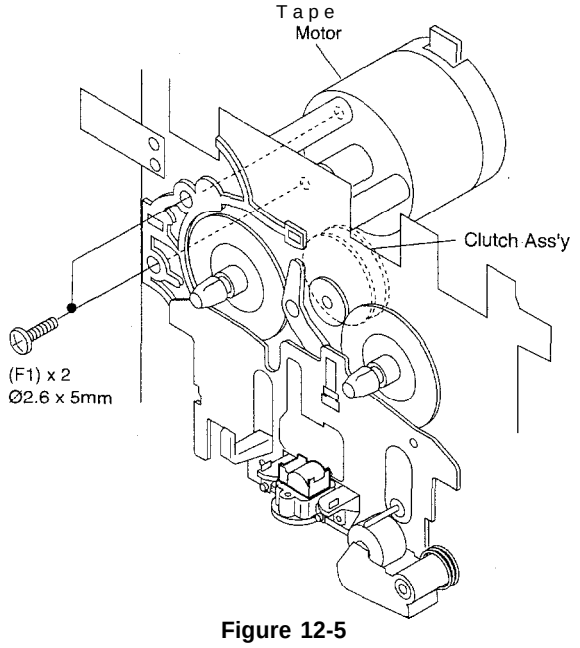


Figure 12-5

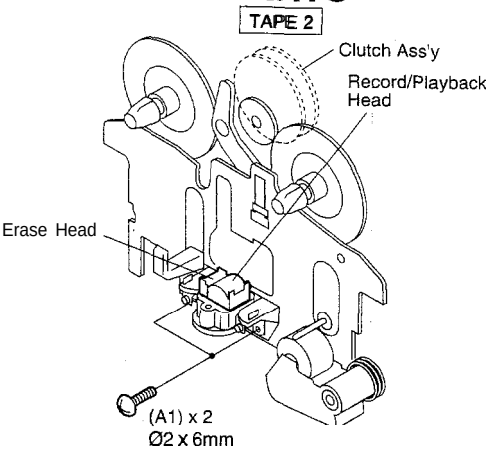


Figure 12-1

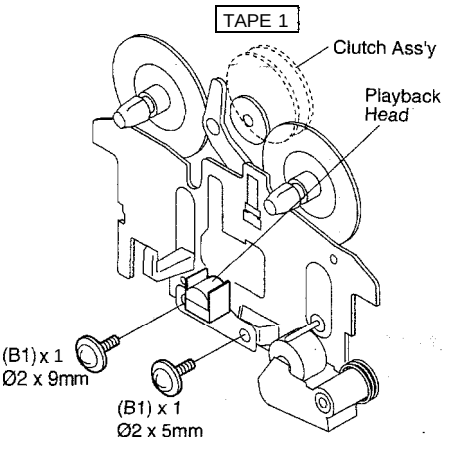


Figure 12-2

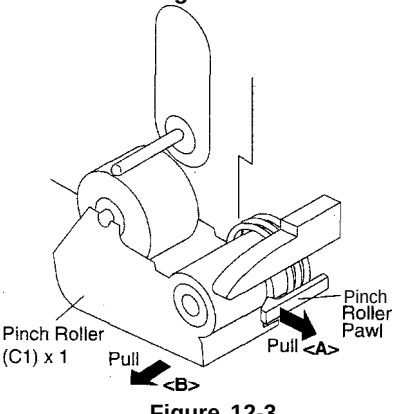


Figure 12-3

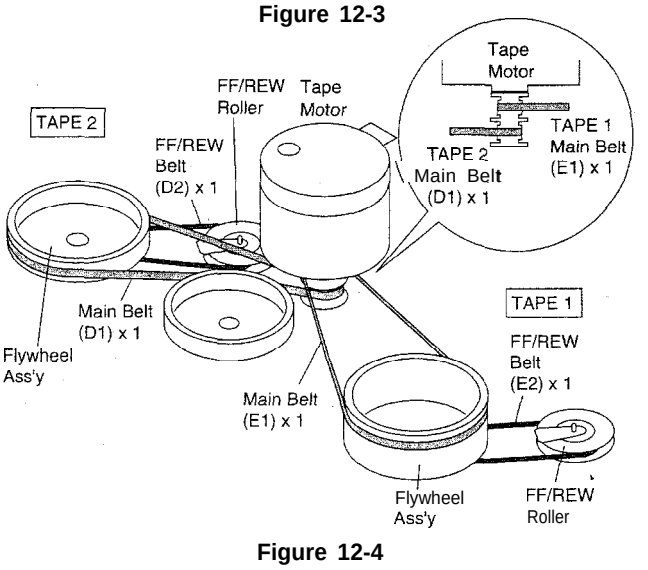


Figure 12-4

CD MECHANISM SECTION

Perform steps 1, 2, 3, 12, 13, 14 and 15 of the disassembly method to remove the CD mechanism.

How to remove the CD loading motor (See Fig. 13-1)

1. Bend the hooks (Al) x 5 pcs., to remove the CD loading motor.
2. Remove the drive belt (A2) x 1 pc.

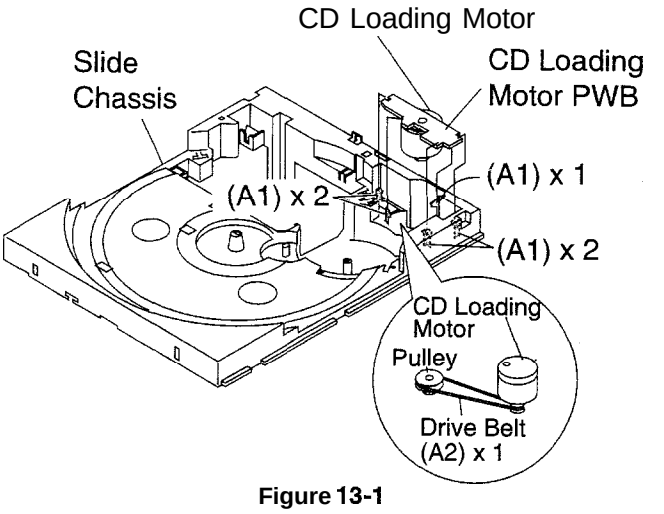


Figure 13-1

How to remove the pickup (See Fig. 13-2)

1. Remove the stop washer (B1) x 1 pc., to remove the gear (B2) x 1 pc.
2. Remove the screws (B3) x2 pcs., to remove the shaft (B4).
3. Remove the pickup.

Note

After removing the connector for the optical pickup from the connector wrap the conductive aluminium foil around the front end of connector so as to protect the optical pickup from electrostatic damage.

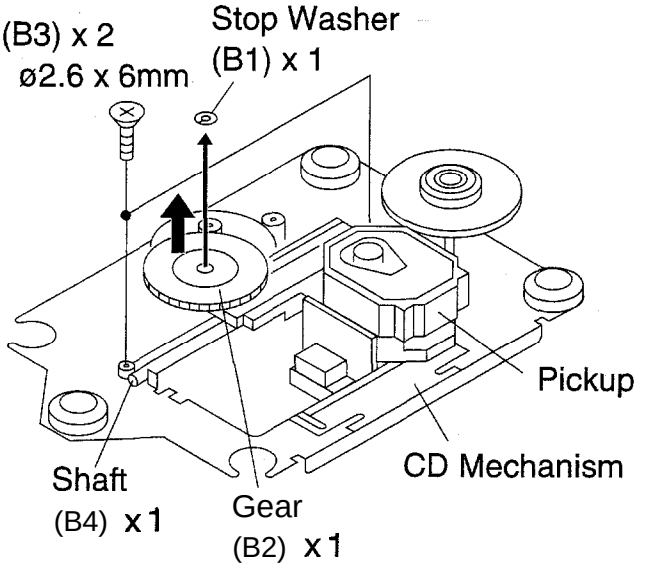


Figure 13-2

ADJUSTMENT

MECHANISM SECTION

- **Driving Force Check**

Torque Meter	Specified Value
Play: TW-2111	Tape 1: Over 80 g Tape 2: Over 80 g

- **Torque Check**

Torque Meter	Specified Value	
	Tape 1	Tape 2
Play: TW-2111	30 to 80 g.cm	30 to 80 g.cm
Fast forward: TW-2231	—	70 to 180 g.cm
Rewind: TW-2231	—	70 to 180 g.cm

- **Tape Speed**

	Test Tape	Adjusting Point	Specified Value	Instrument Connection
Normal speed	MTT-111	Variable Resistor in motor.	**3,000** ± **30** Hz	Speaker terminal (Load resistance: **6** ohms)

TAPE MECHANISM

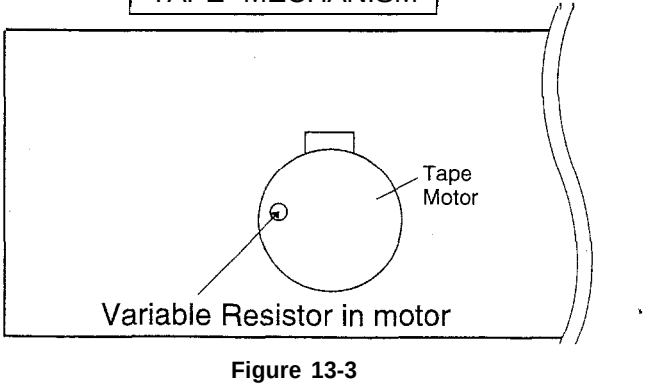


Figure 13-3

TUNER SECTION

fL: Low-range frequency
fH: High-range frequency

- **AM IF/RF**

Signal generator: 400 Hz, 30%, AM modulated

Test Stage	Frequency	Frequency Display	Setting/ Adjusting Parts	Instrument Connection
AM IF	450 kHz	1,602 kHz	T351	*1
AM Band Coverage	—	531 kHz	(fL): T306 1.1 ±0.1V	*2
AM Tracking	990 kHz	990 kHz	(fL): T303	*1

*1. Input: Antenna Output: TP302
*2. Input: Antenna Output: TP301

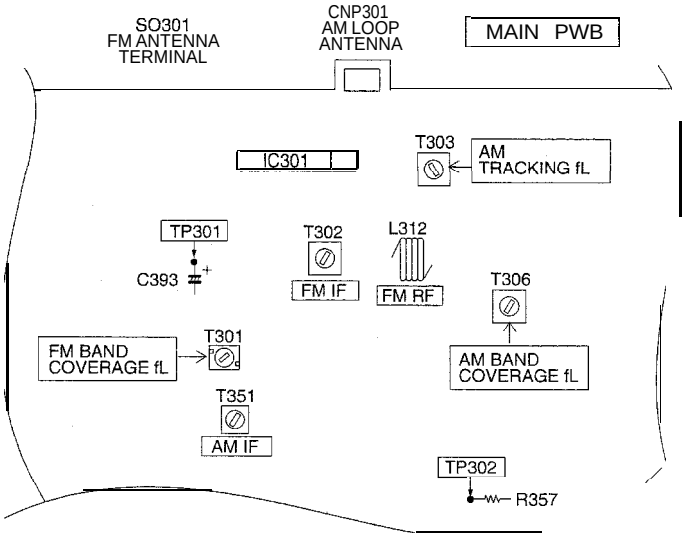


Figure 14-1 ADJUSTMENT POINTS

- **FM RF**

Signal generator: 1kHz, 40 kHz dev., FM modulated

Test Stage	Frequency	Frequency Display	Setting/ Adjusting Point	Instrument Connection
FM Band Coverage	—	87.50 MHz	T301 (fL): 1.3 V ± 50 mV	*1
FM RF	98.00 MHz (10-30 dB)	98.00 MHz	L312	*2

*1. Input: Antenna Output: TP301
*2. Input: Antenna Output: Speaker terminal

- **FM IF**

Signal generator: 10.7 MHz, FM modulated

Test Stage	Frequency	Frequency Display	Setting/ Adjusting Point	Instrument Connection
IF	10.7 MHz	98 MHz	T302 (Turn the core of transformer T302 fully counter-clock wise)	*1

*1. Input: Antenna Output: TP301

CD SECTION

- **Adjustment**

Since this CD system incorporates the following automatic adjustment functions, readjustment is not needed when replacing the pickup. Therefore, different PWBs and pickups can be combined freely.

Each time a disc is changed, these adjustments are performed automatically. Therefore, playback of each disc can be performed under optimum conditions.

Items adjusted automatically

(1) Offset adjustment (The offset voltage between the head amplifier output and the VREF reference voltage is compensated inside the IC.)
  * Focus offset adjustment
  * Tracking offset adjustment

(2) Tracking balance adjustment (waveform drawing Fig.14-2 EFBL)

(3) Gain adjustment (The gain is compensated inside the IC so that the loop gain at the gain crossover frequency will be 0 dB.)
  * Focus gain adjustment
  * Tracking gain adjustment

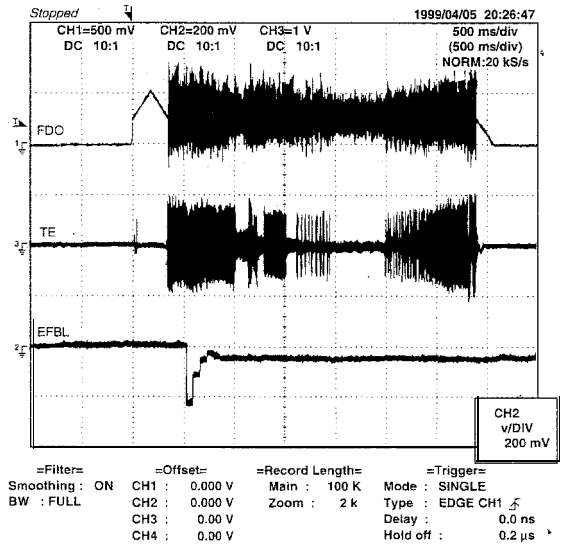
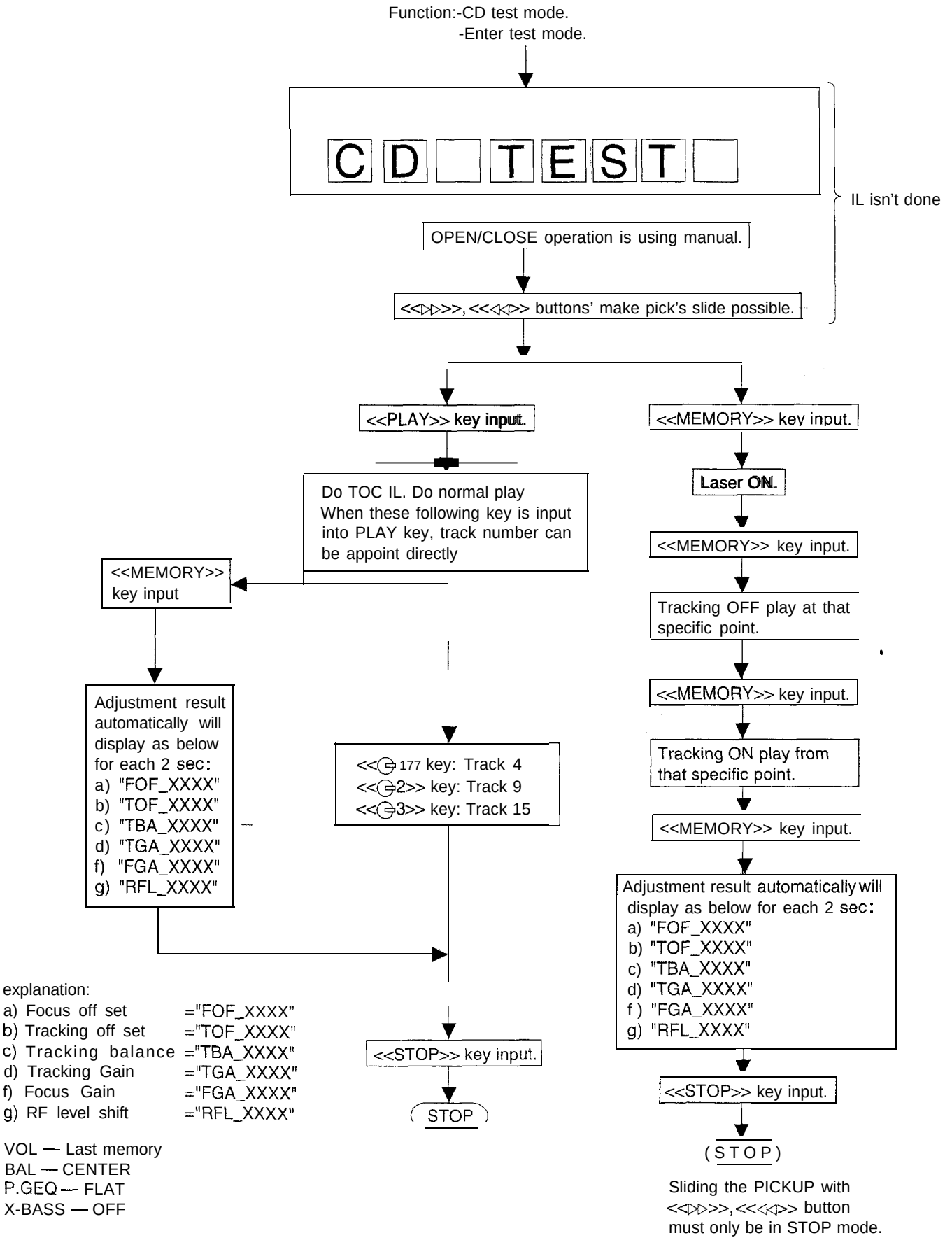


Figure 14-2

TEST MODE

- **Setting the test mode**

Any one of test mode can be set by pressing several keys as follows.
<X-BASS>+<CD>+<POWER> TEST:CD operation test



explanation:

a) Focus off set	="FOF_XXXX"
b) Tracking off set	="TOF_XXXX"
c) Tracking balance	="TBA_XXXX"
d) Tracking Gain	="TGA_XXXX"
f) Focus Gain	="FGA_XXXX"
g) RF level shift	="RFL_XXXX"

VOL — Last memory
BAL — CENTER
P.GEQ — FLAT
X-BASS — OFF

To cancel : Power OFF

Sliding the PICKUP with <<▷▷>>, <<◁◁>> button must only be in STOP mode.

Standard Specification of Stereo System Error Message Display Contents

Error Contents		Display	Notes
Output while Device Protection Operation		'PROTECT	00: While in Protect Circuit Operate 01: Over Current Detection 02: DC Detection 03:
TAPE	Mechanism Error	'ER-TA**'	00: Tape Mechanism Error 01: Initial Error 02: 03:
CD/VCD	Pickup Mechanism Error	'ER-CD**'	00: Pickup Mechanism Error 01: PU-IN SW Detection NG 02: 03:
	CD Changer Mechanism Error	'ER-CD**'	10: Changer Error 11: Initial Error 12: 13:
	Tray Error	'ER-CD**'	20: Tray Error 21: 22: 23:
	Micon Communication Error	'ER-CD**'	30: System-VCD 31: System-CD Servo
	Focus Not Match	'NO DISC'	
	IL Time Over	'NOT READ'	
TUN	PLL Unlock	'ER-TU**'	00: TUN Error 01: PLL Unlock 02: 03:

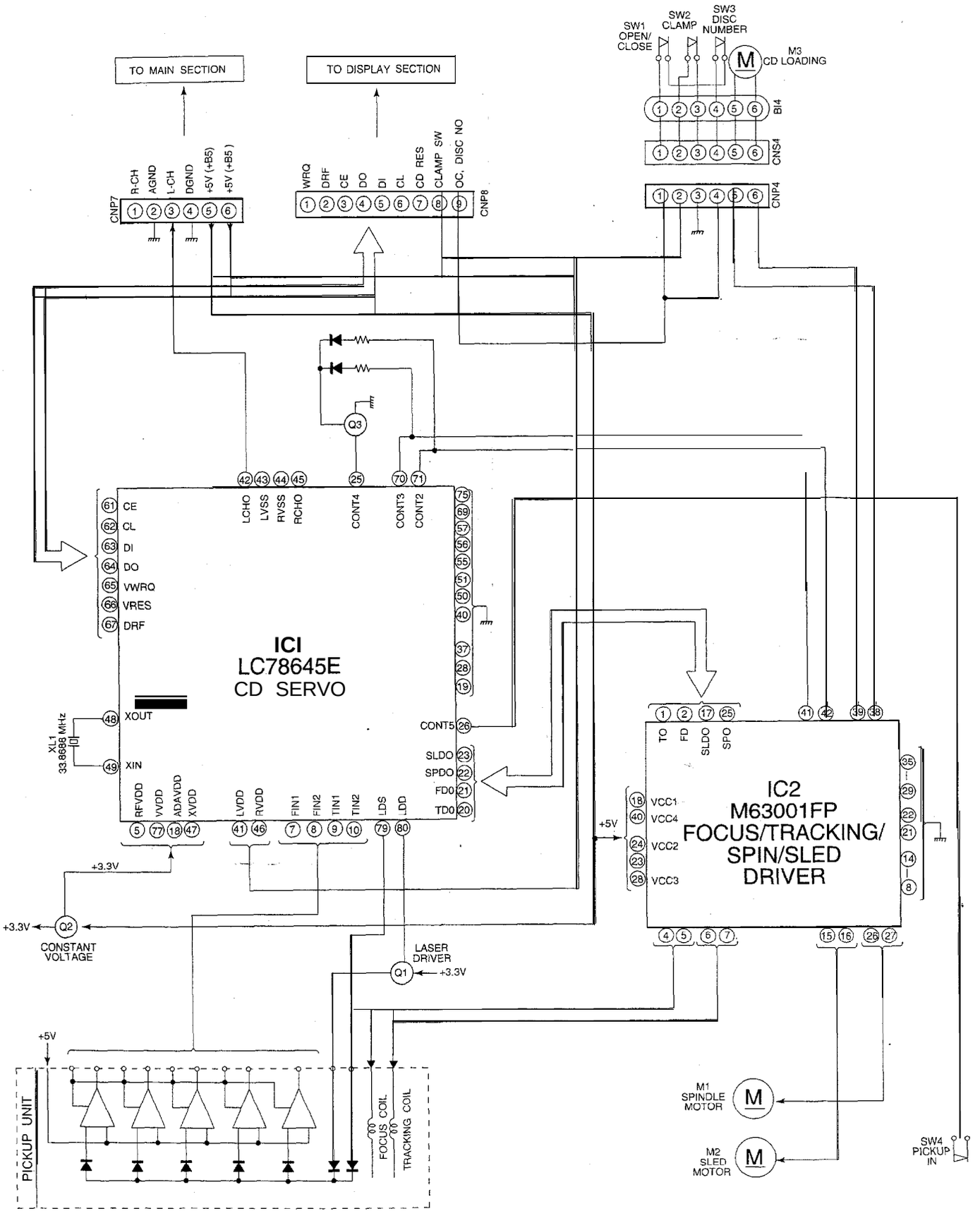


Figure 17 BLOCK DIAGRAM (1/3)

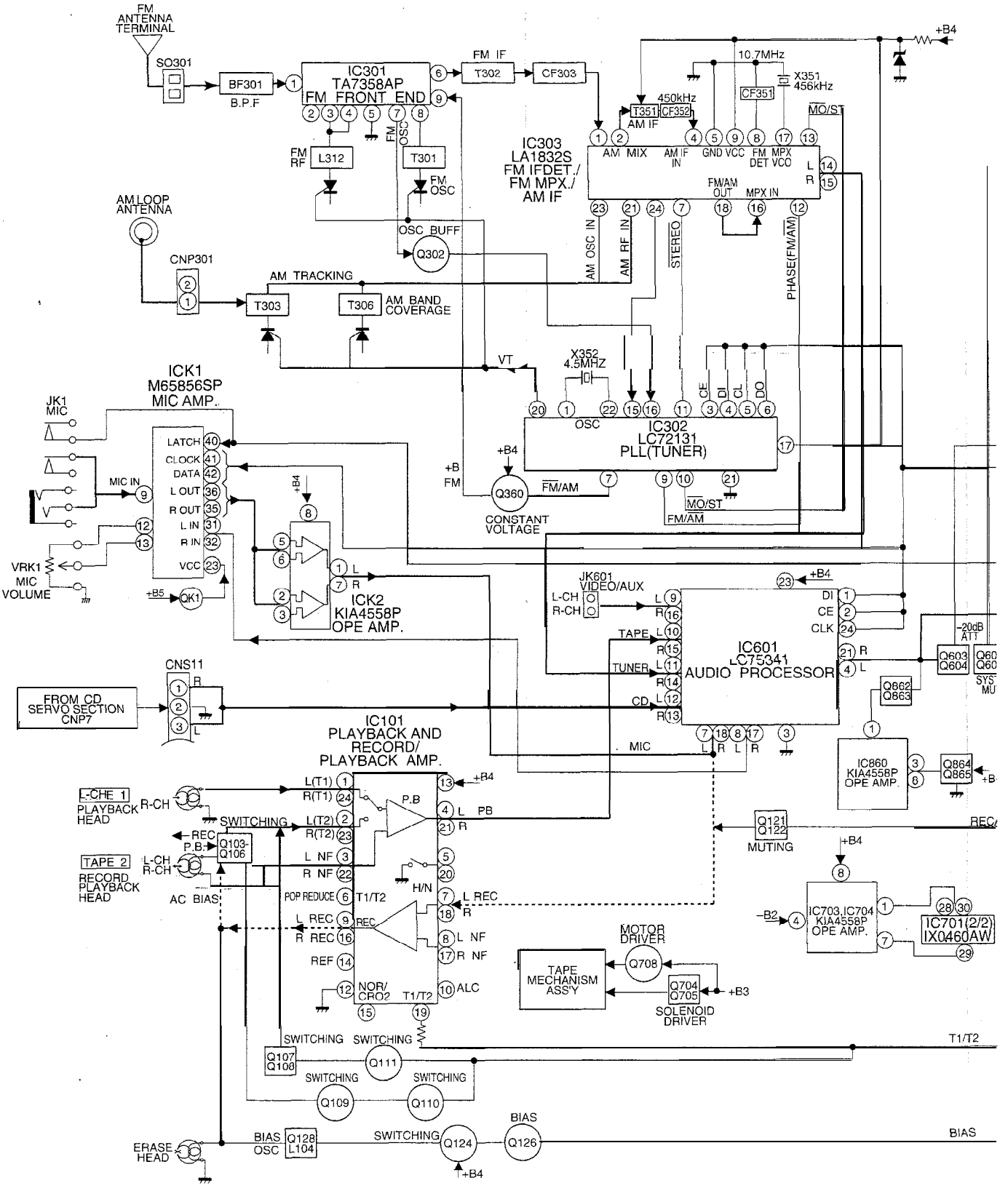


Figure 18 BLOCK DIAGRAM (2/3)

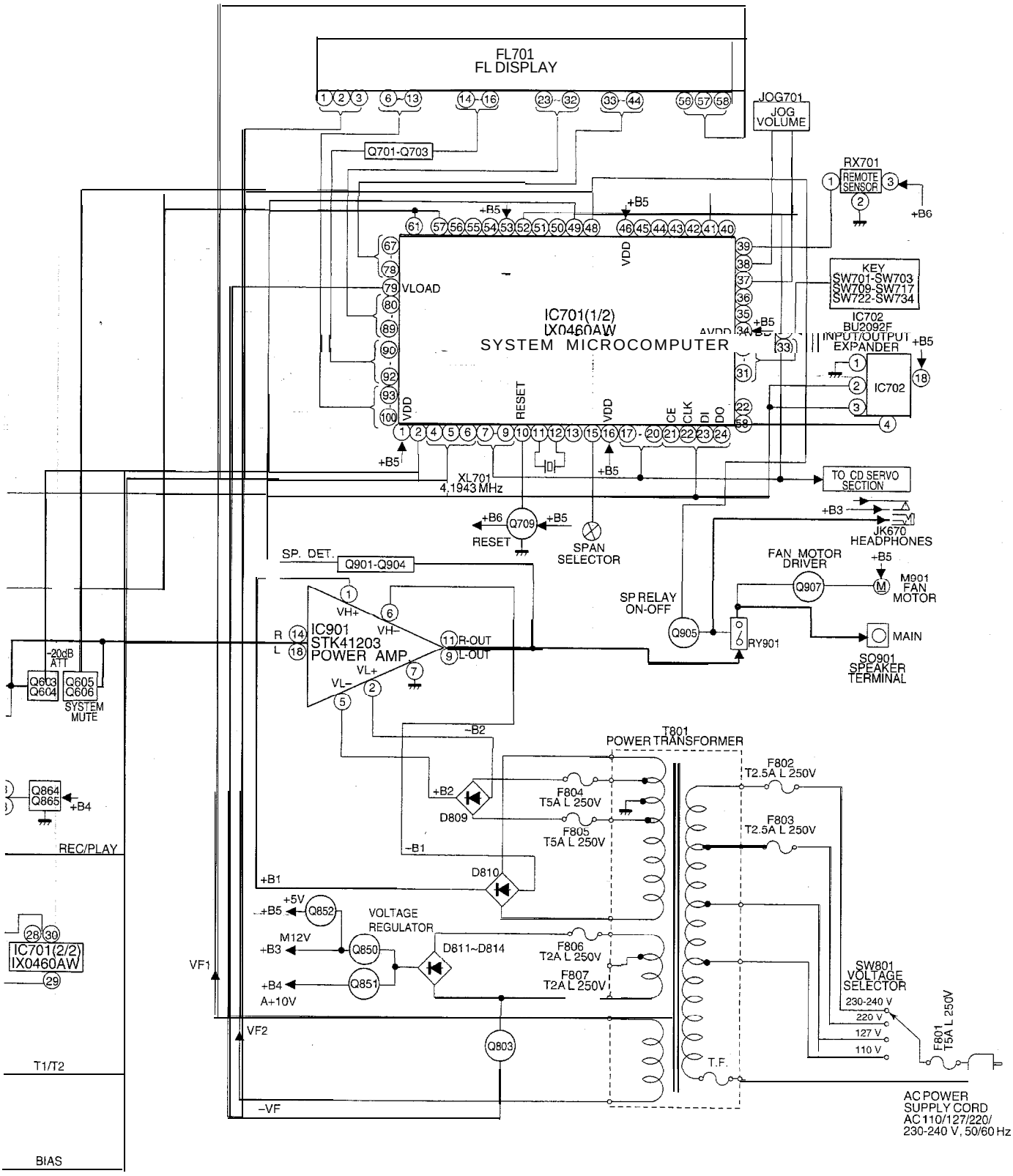
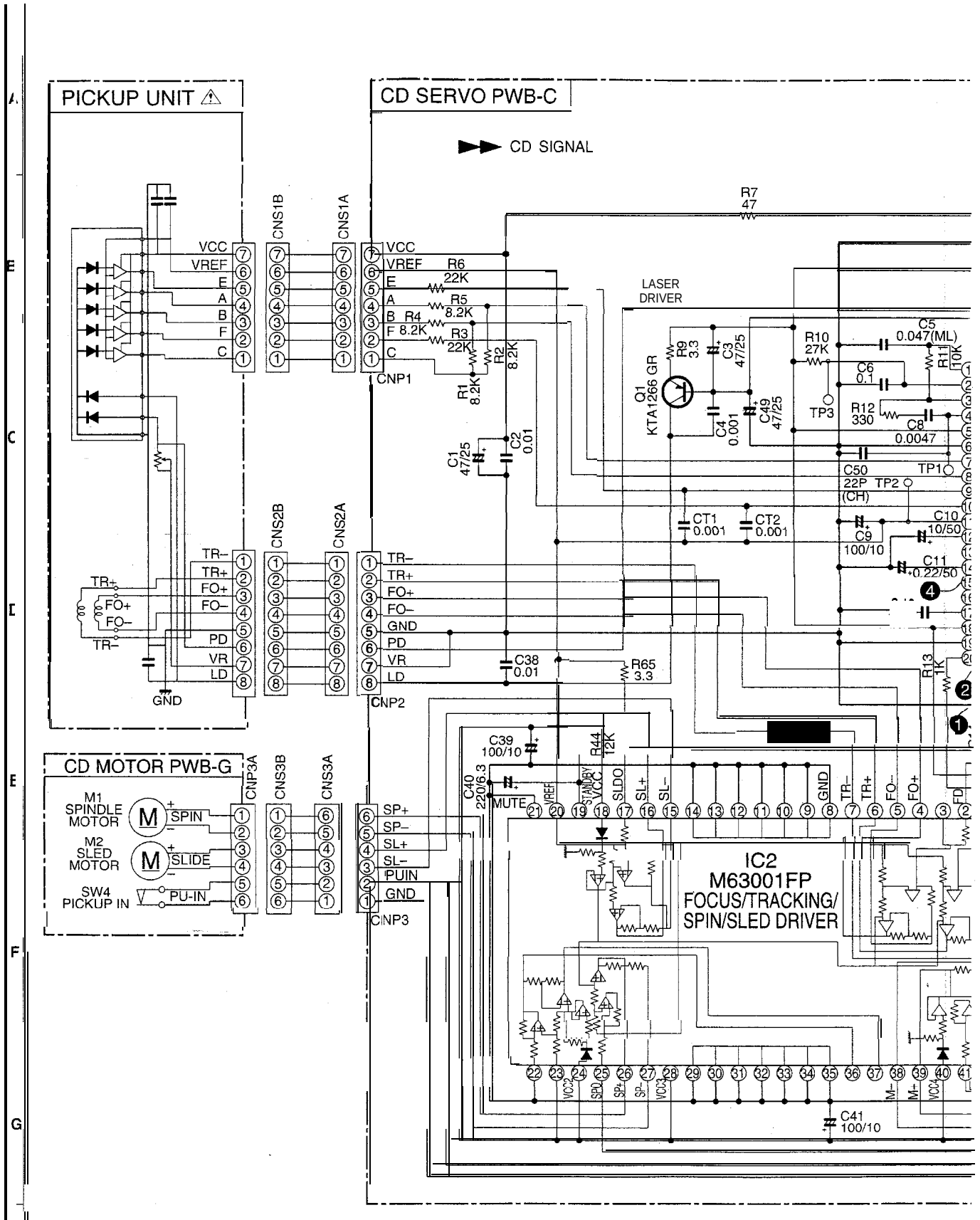
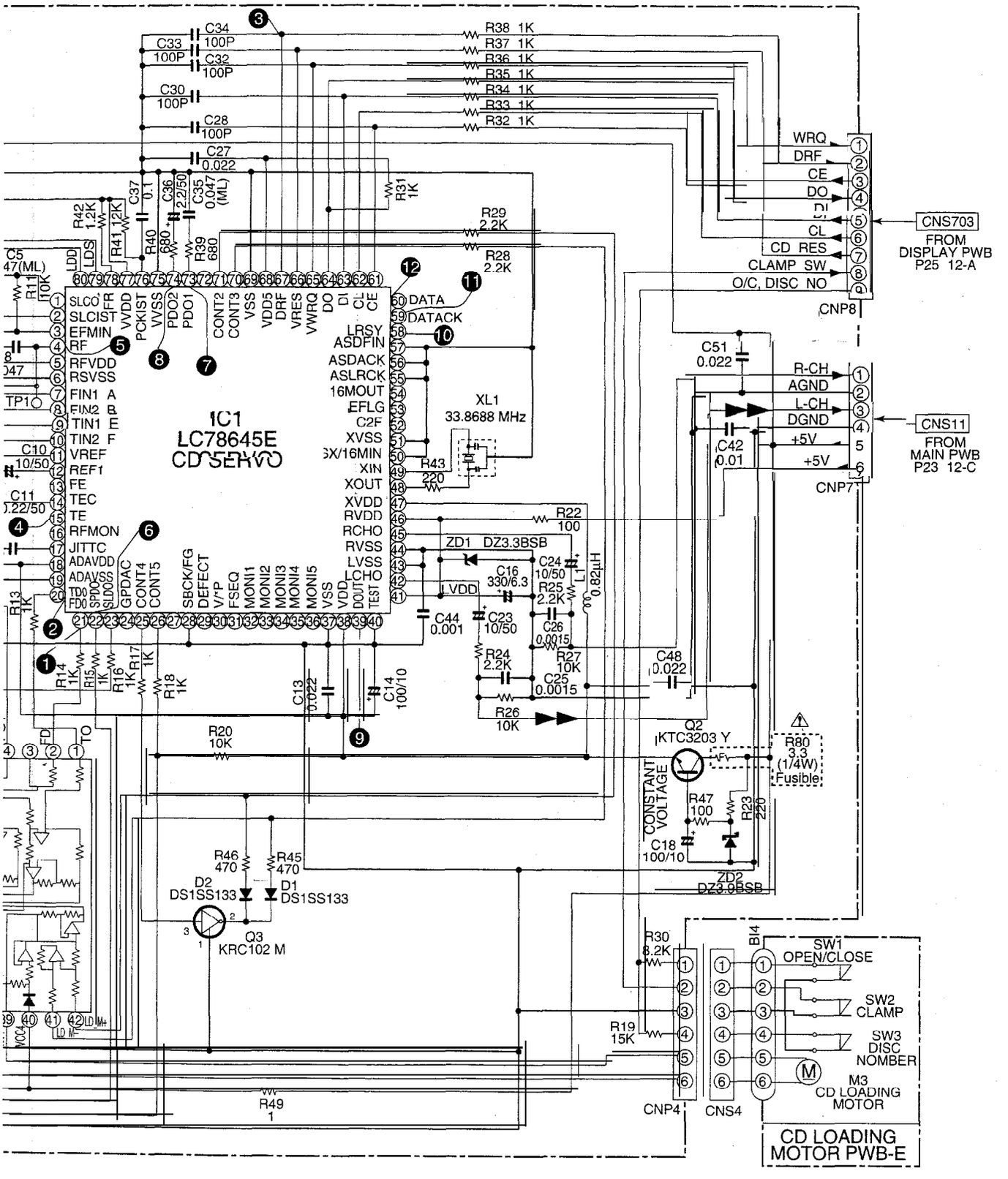


Figure 19 BLOCK DIAGRAM (3/3)



• NOTES ON SCHEMATIC DIAGRAM can be found on page 39.

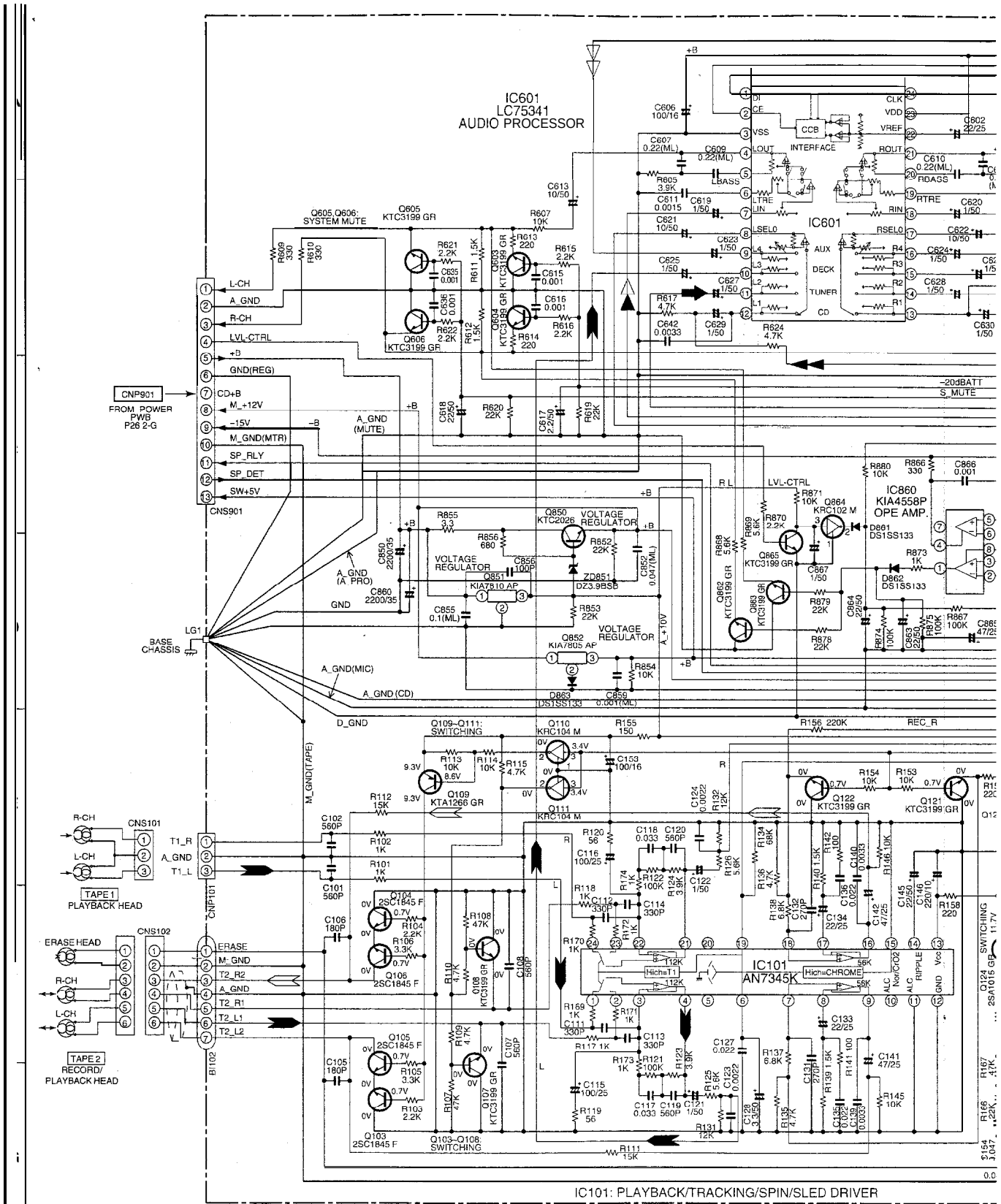
Figure 20 SCHEMATIC DIAGRAM (1/10)



• The numbers ❶ to ⓬ are waveform numbers shown in page 40.

7	8	9	10	11	12

Figure 21 SCHEMATIC DIAGRAM (2/10)



• NOTES ON SCHEMATIC DIAGRAM can be found on page 39.

Figure 22 SCHEMATIC DIAGRAM (3/10)

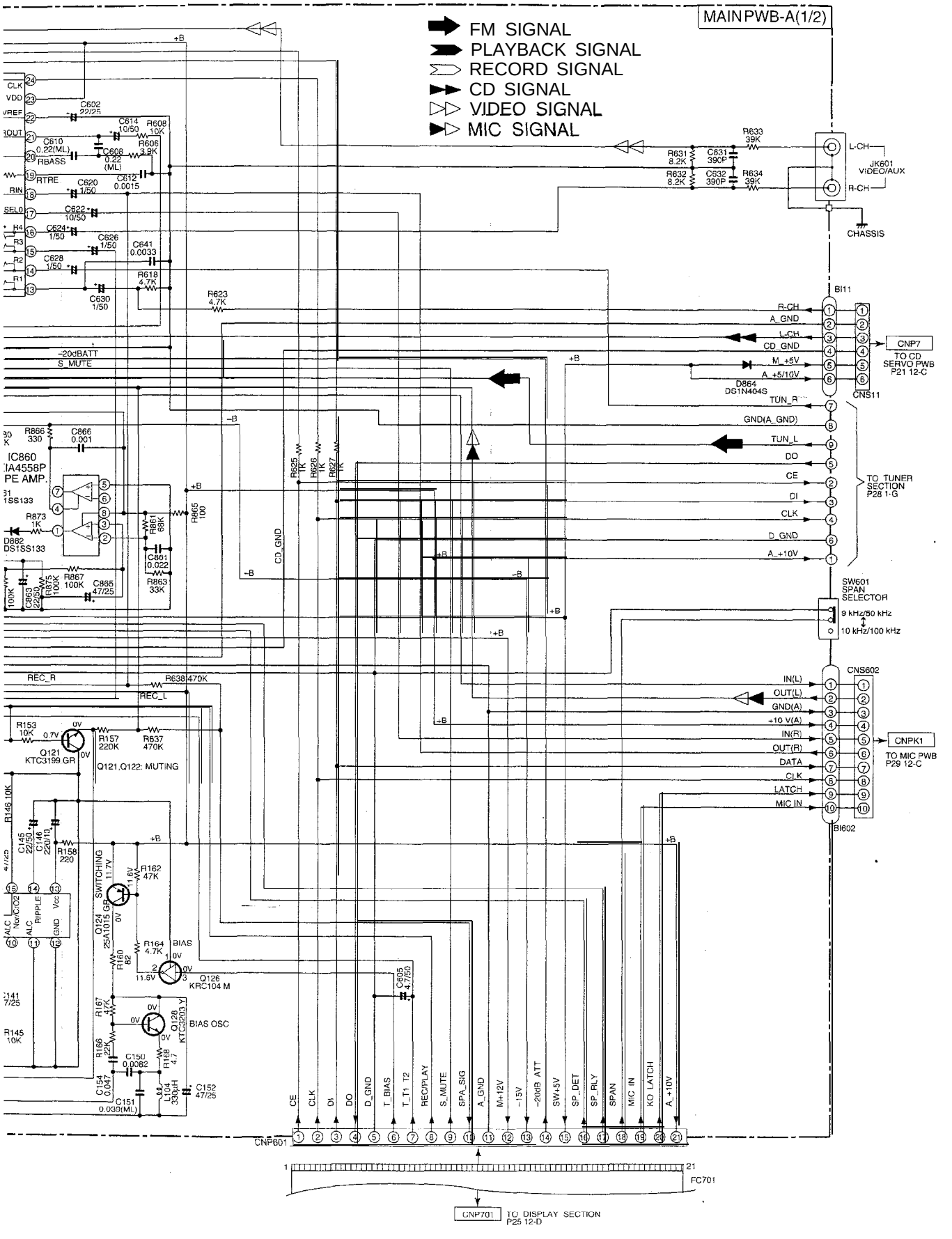
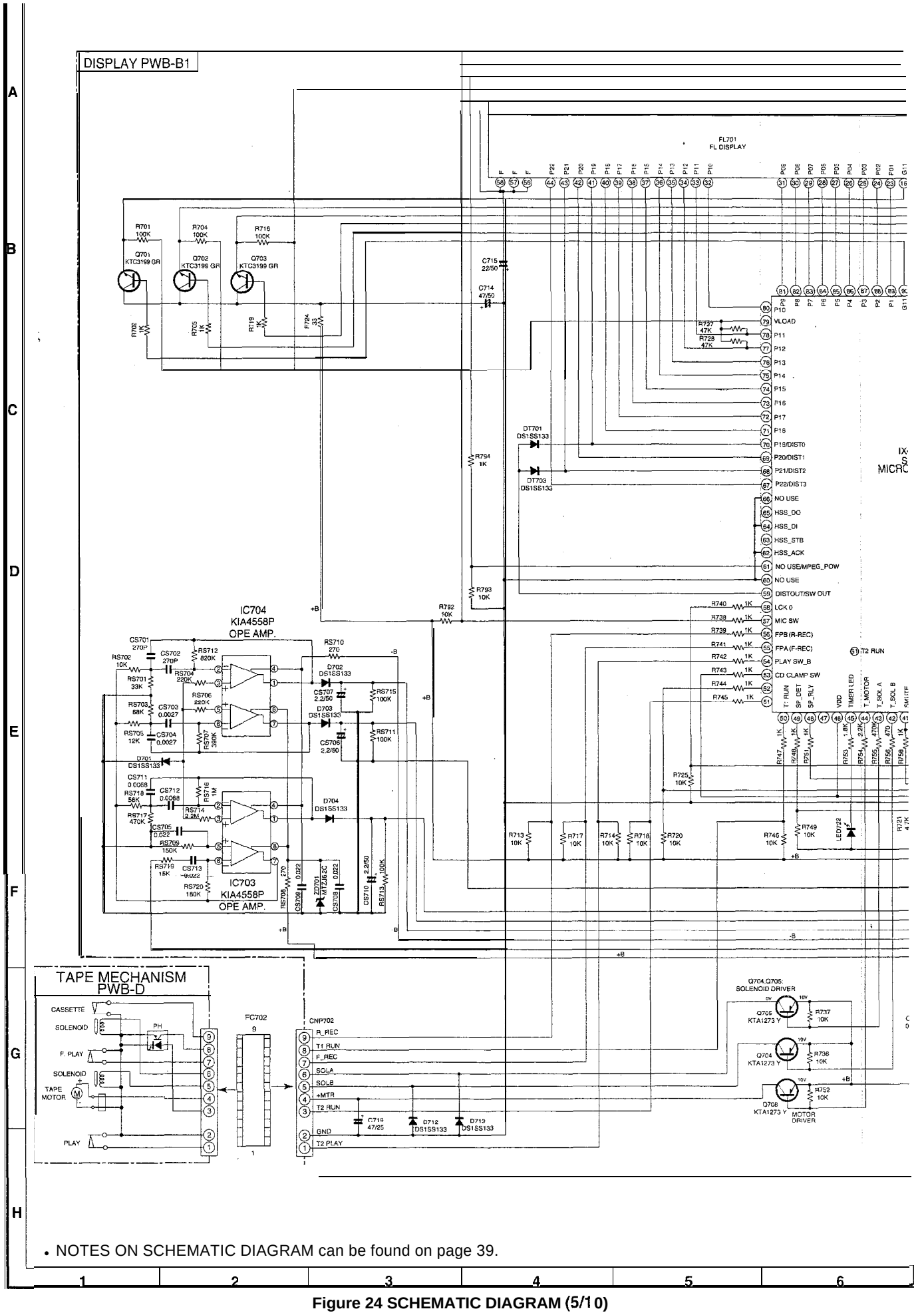


Figure 23 SCHEMATIC DIAGRAM (4/10)



• NOTES ON SCHEMATIC DIAGRAM can be found on page 39.

Figure 24 SCHEMATIC DIAGRAM (5/10)

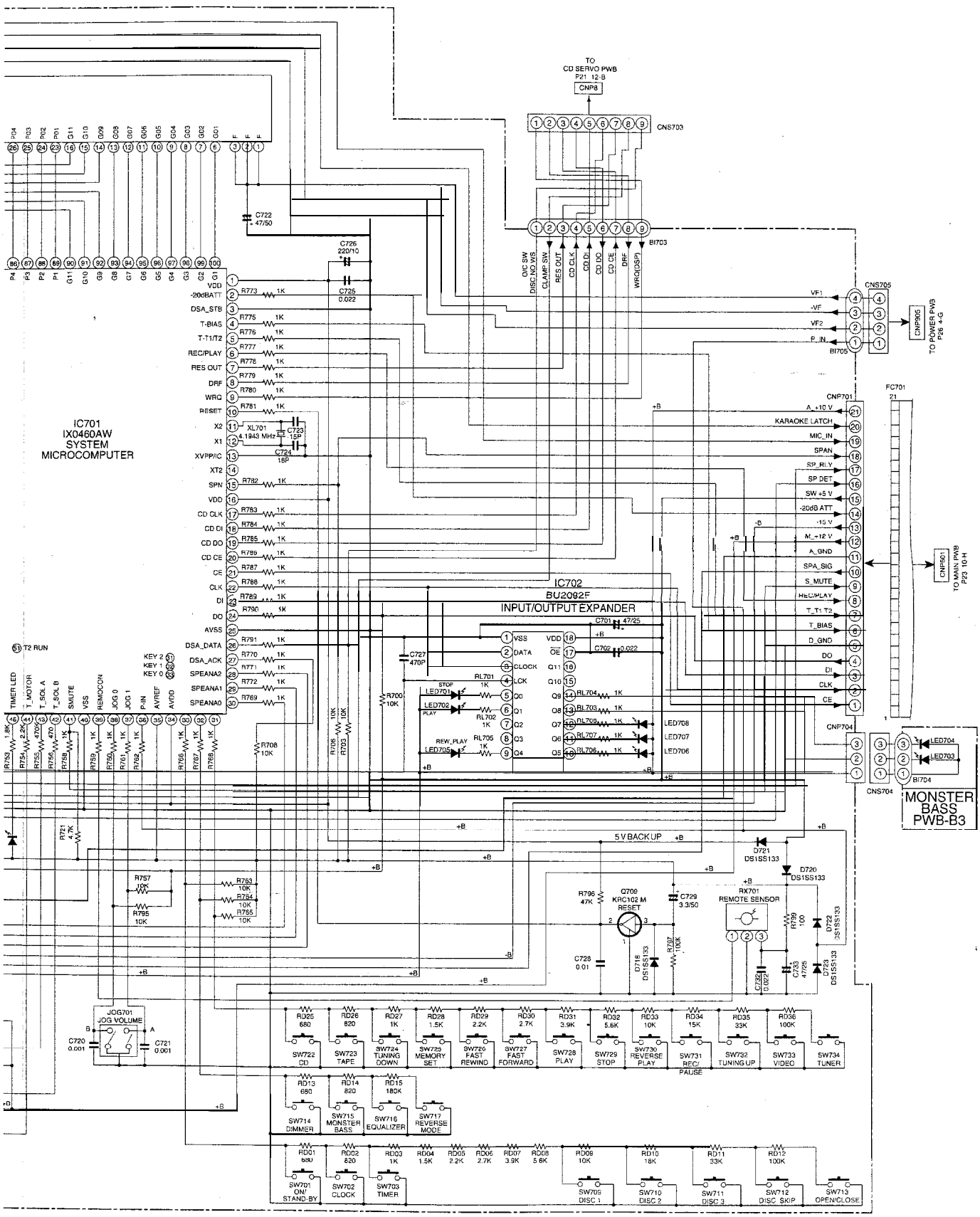
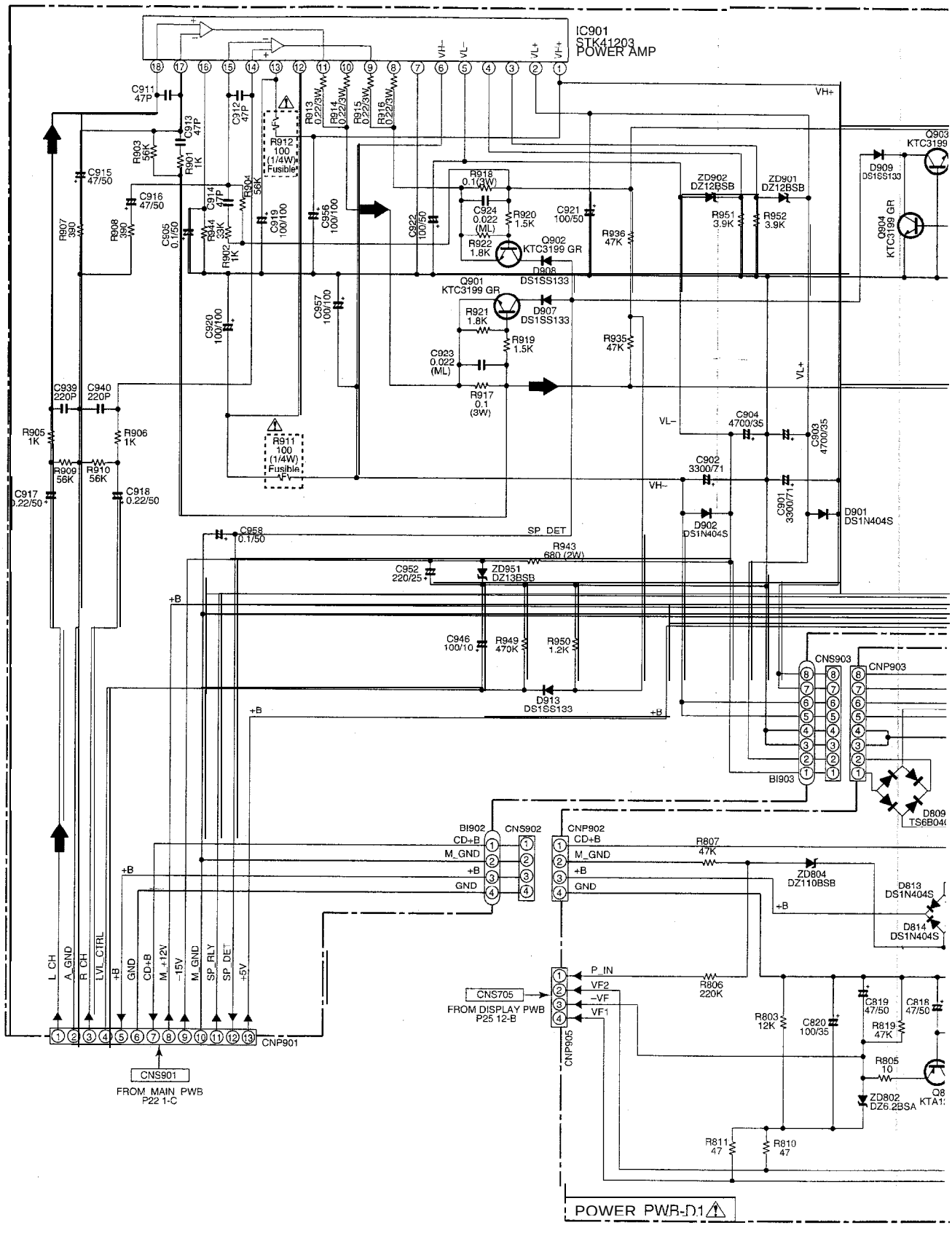
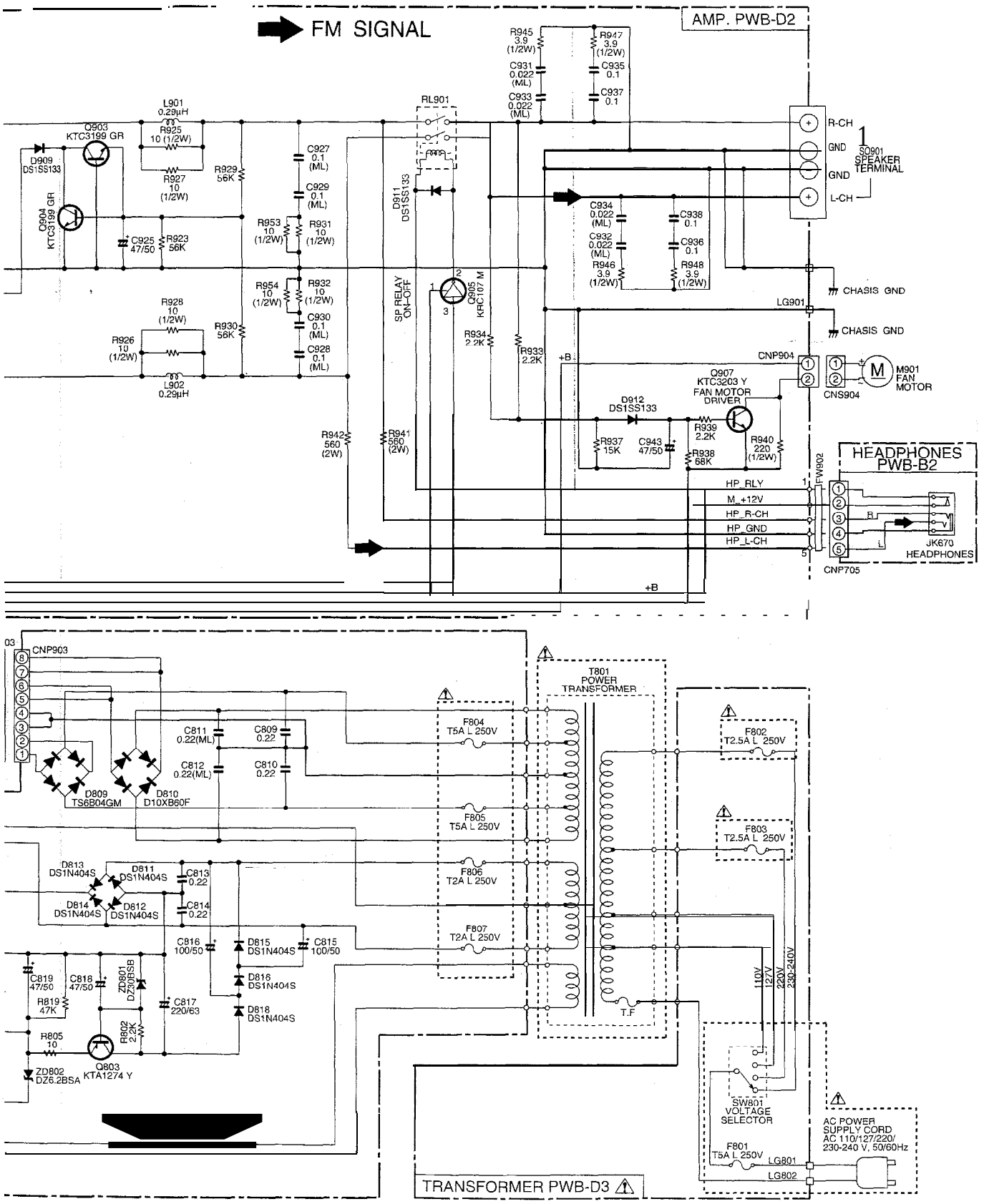


Figure 25 SCHEMATIC DIAGRAM (6/10)



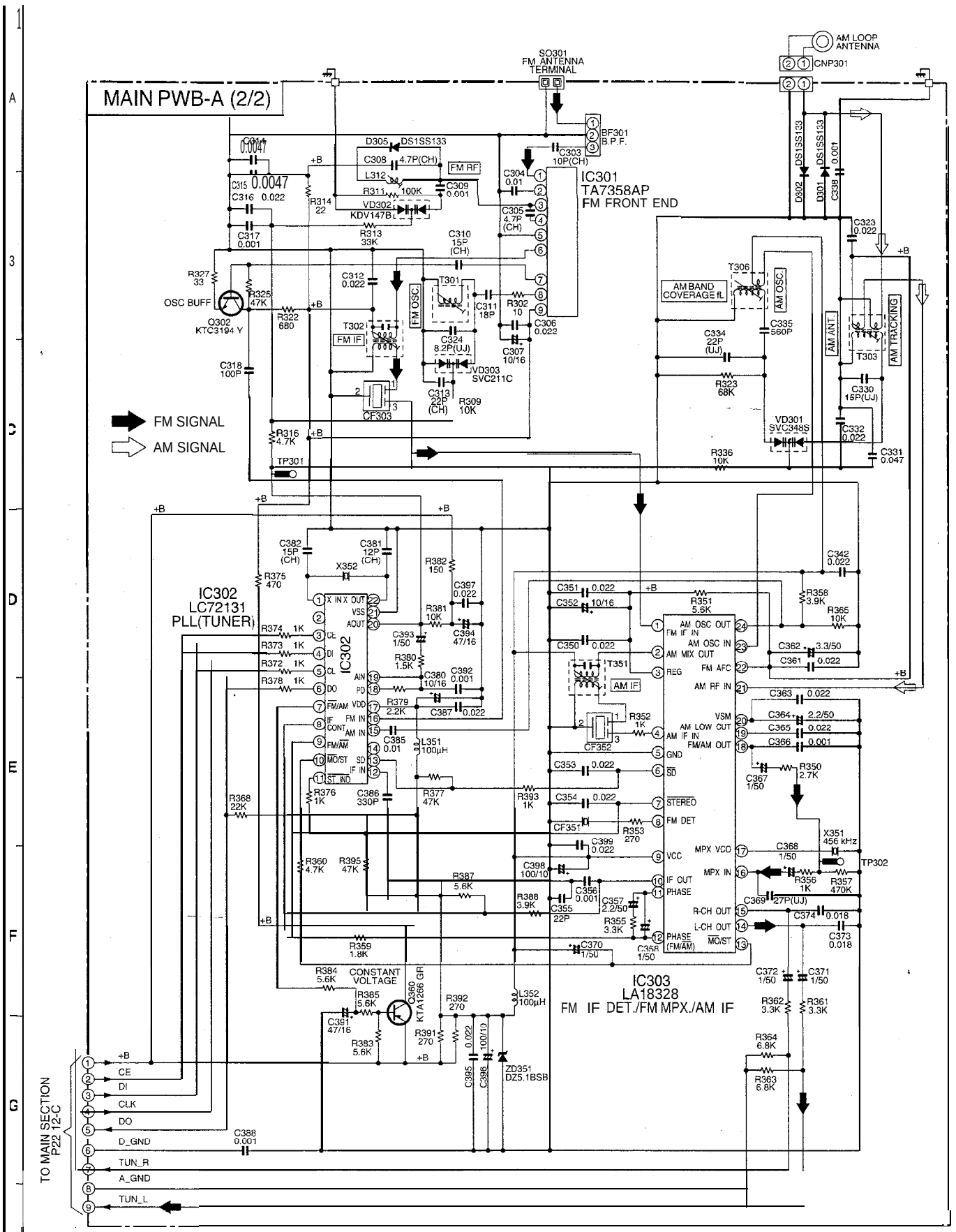
• NOTES ON SCHEMATIC DIAGRAM can be found on page 39.

Figure 26 SCHEMATIC DIAGRAM (7/10)



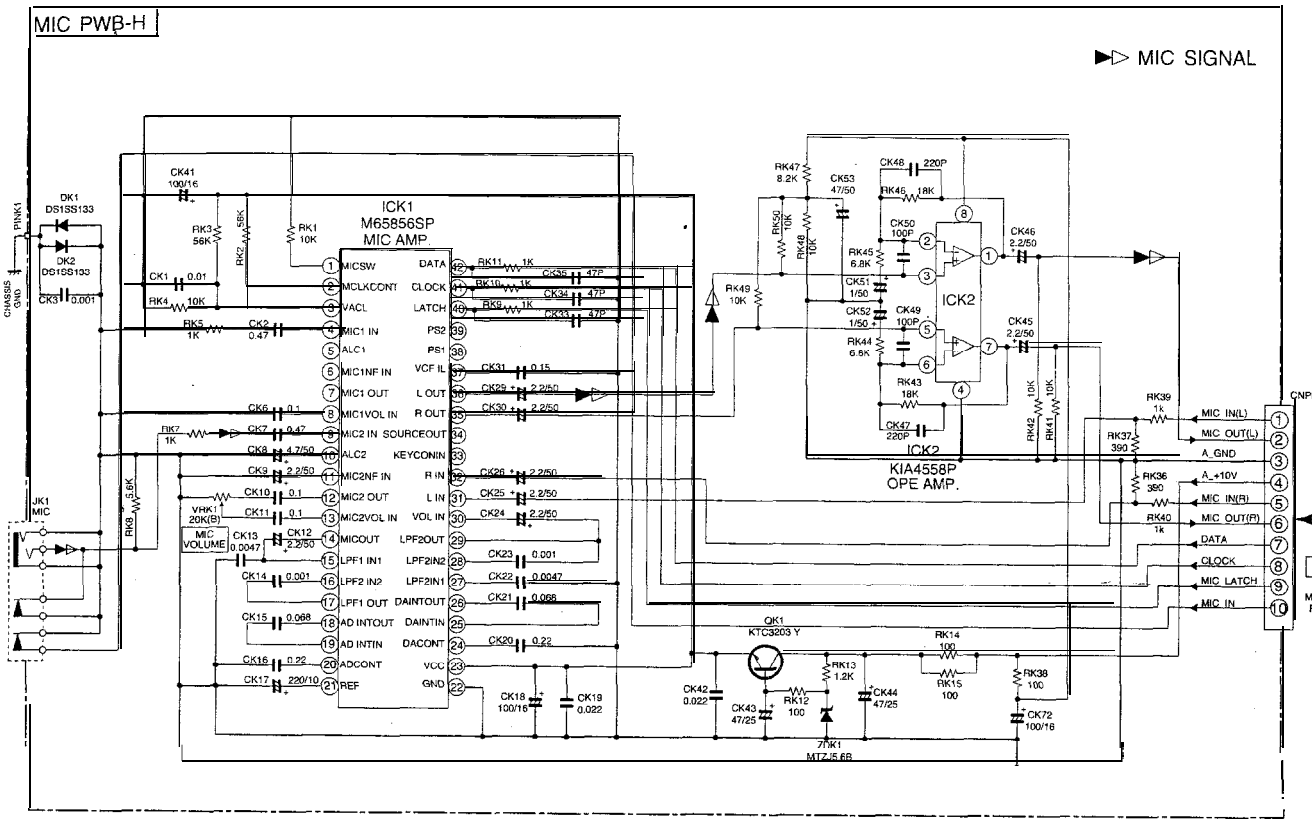
7	8	9	10	11	12

Figure 27 SCHEMATIC DIAGRAM (8/10)



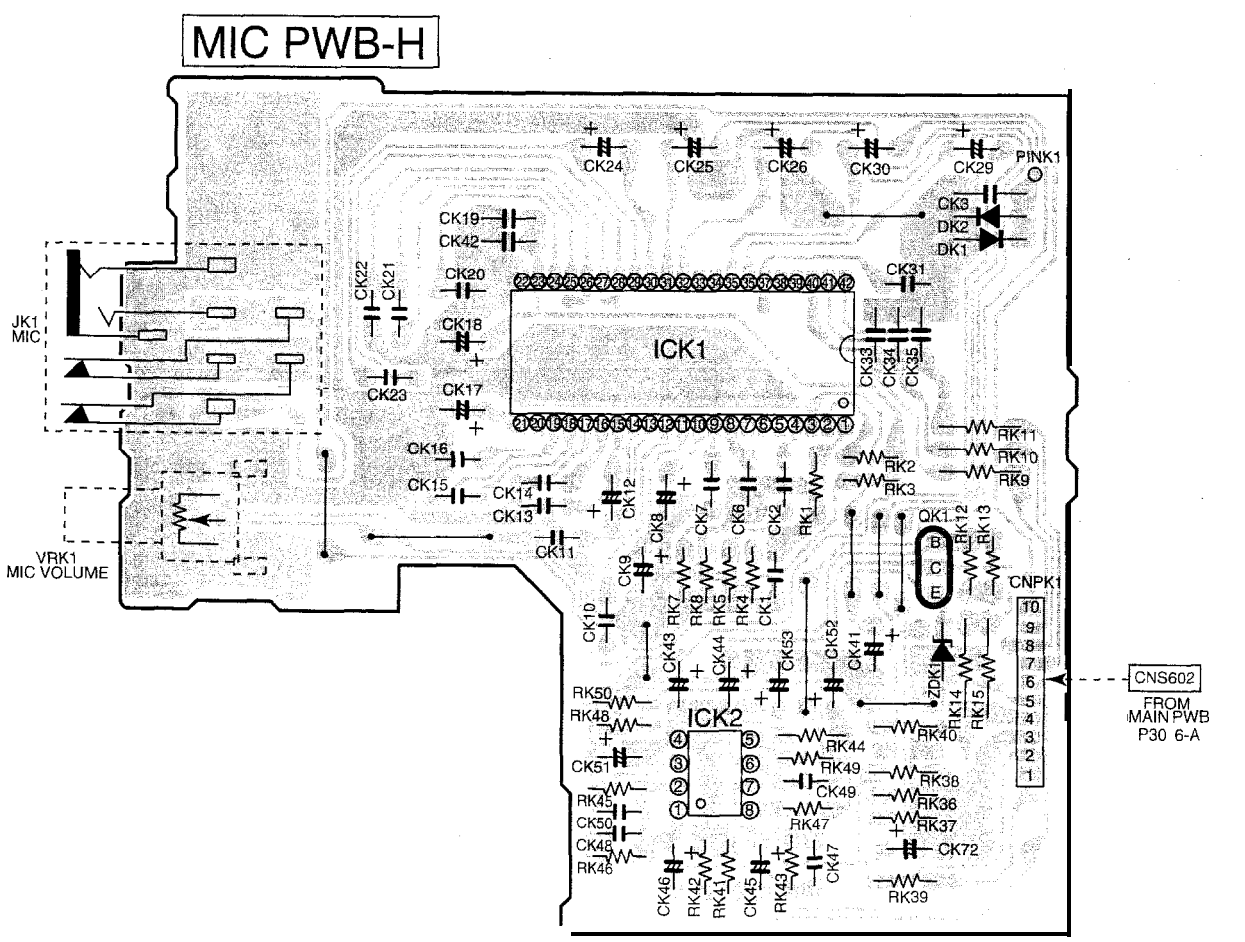
• NOTES ON SCHEMATIC DIAGRAM can be found on page 39.

Figure 28 SCHEMATIC DIAGRAM (9/10)



- NOTES ON SCHEMATIC DIAGRAM can be found on page 39.

Figure 29 SCHEMATIC DIAGRAM (10/10)



7	8	9	10	11	12

Figure 29 WIRING SIDE OF P.W.BOARD (1/9)

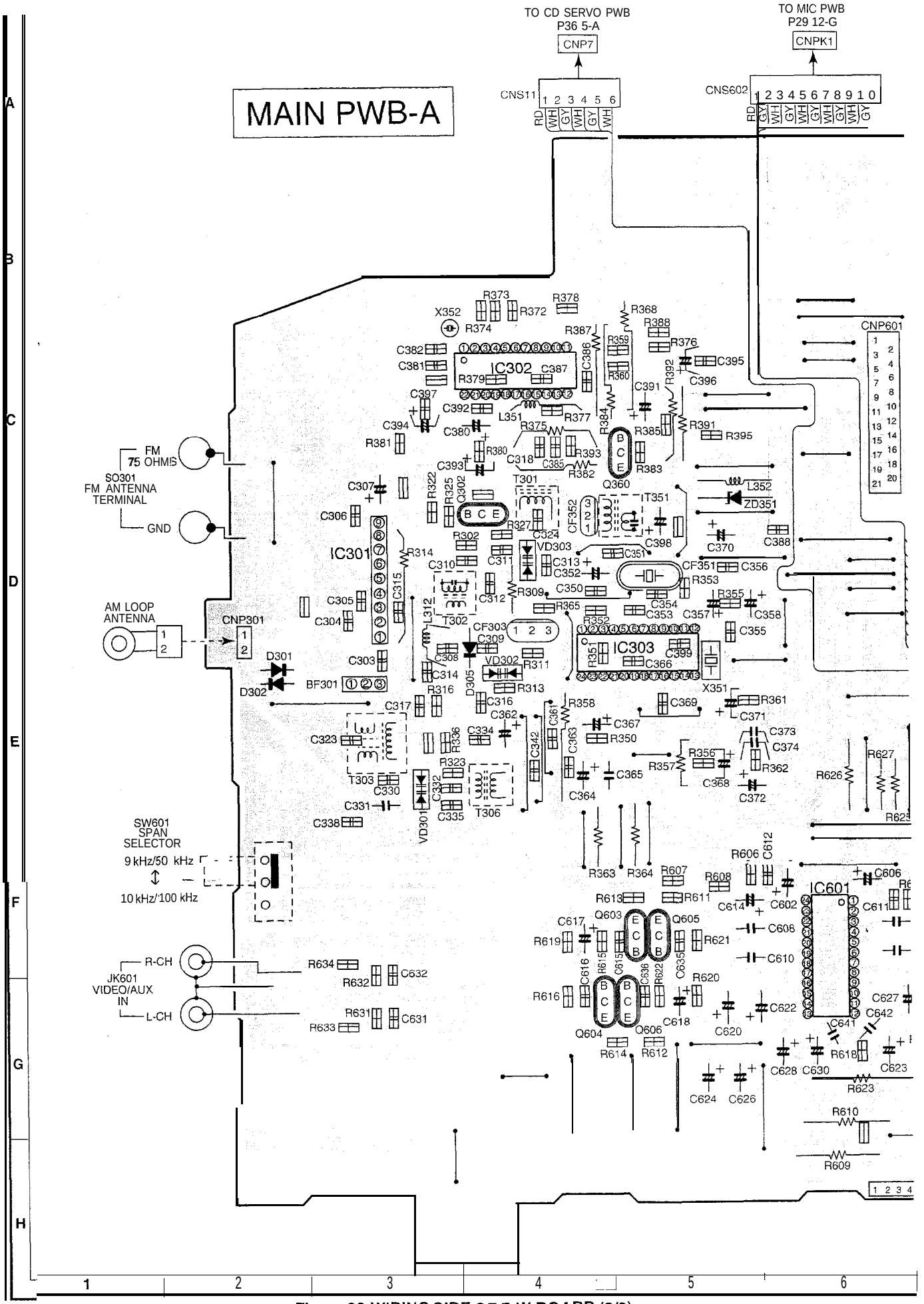
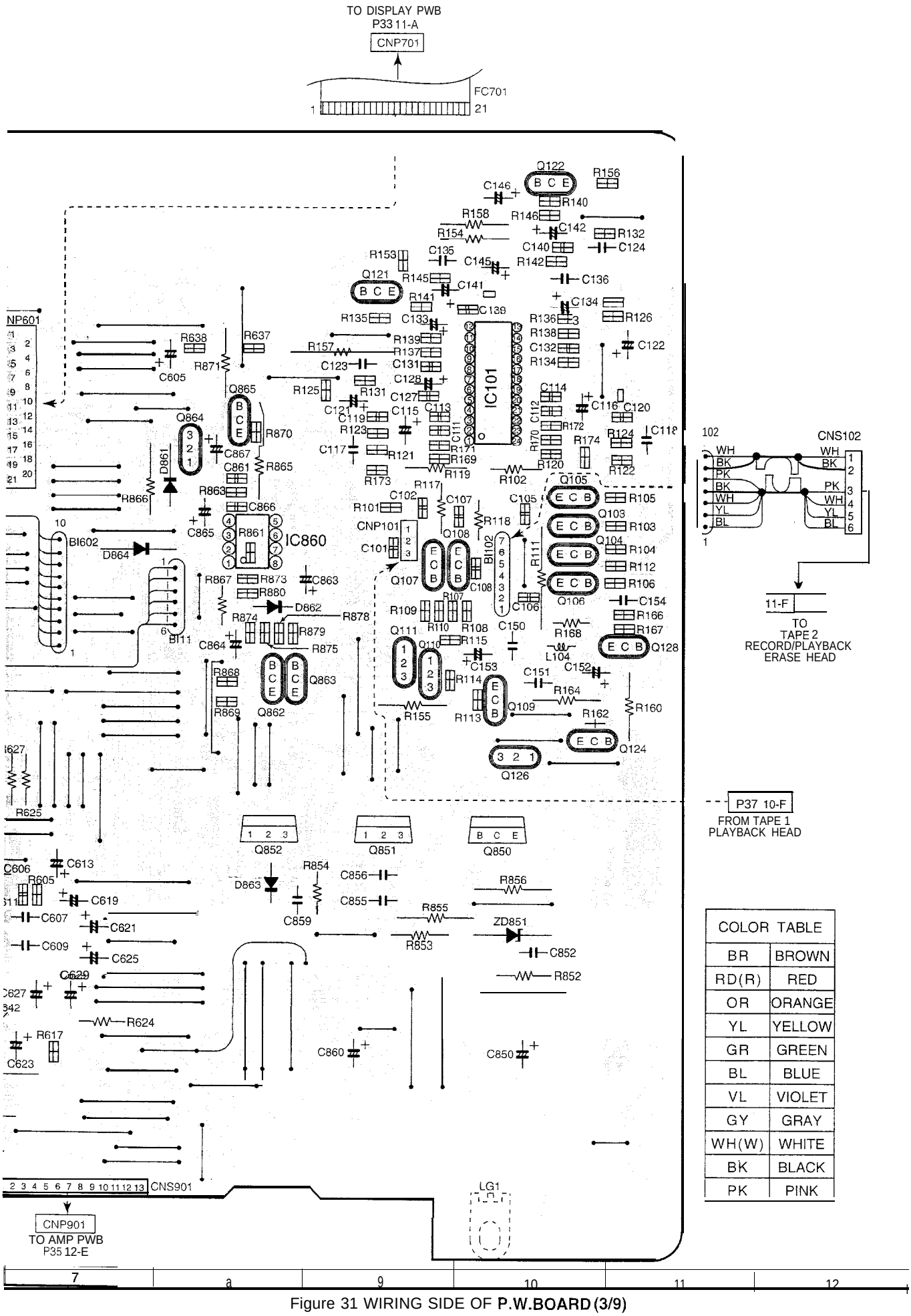


Figure 30 WIRING SIDE OF P.W.BOARD (2/9)



COLOR TABLE	
BR	BROWN
RD(R)	RED
OR	ORANGE
YL	YELLOW
GR	GREEN
BL	BLUE
VL	VIOLET
GY	GRAY
WH(W)	WHITE
BK	BLACK
PK	PINK

Figure 31 WIRING SIDE OF **P.W.BOARD (3/9)**

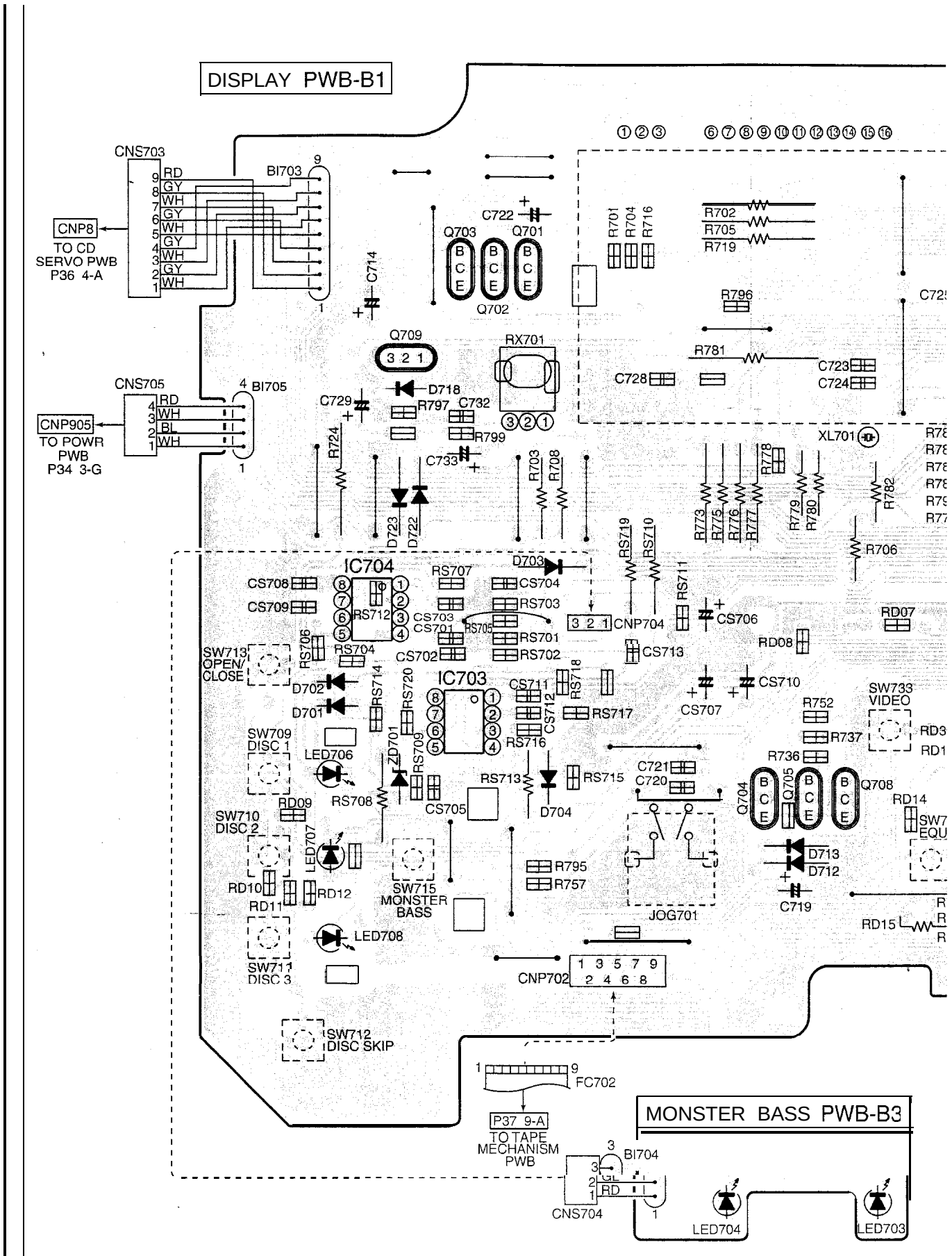
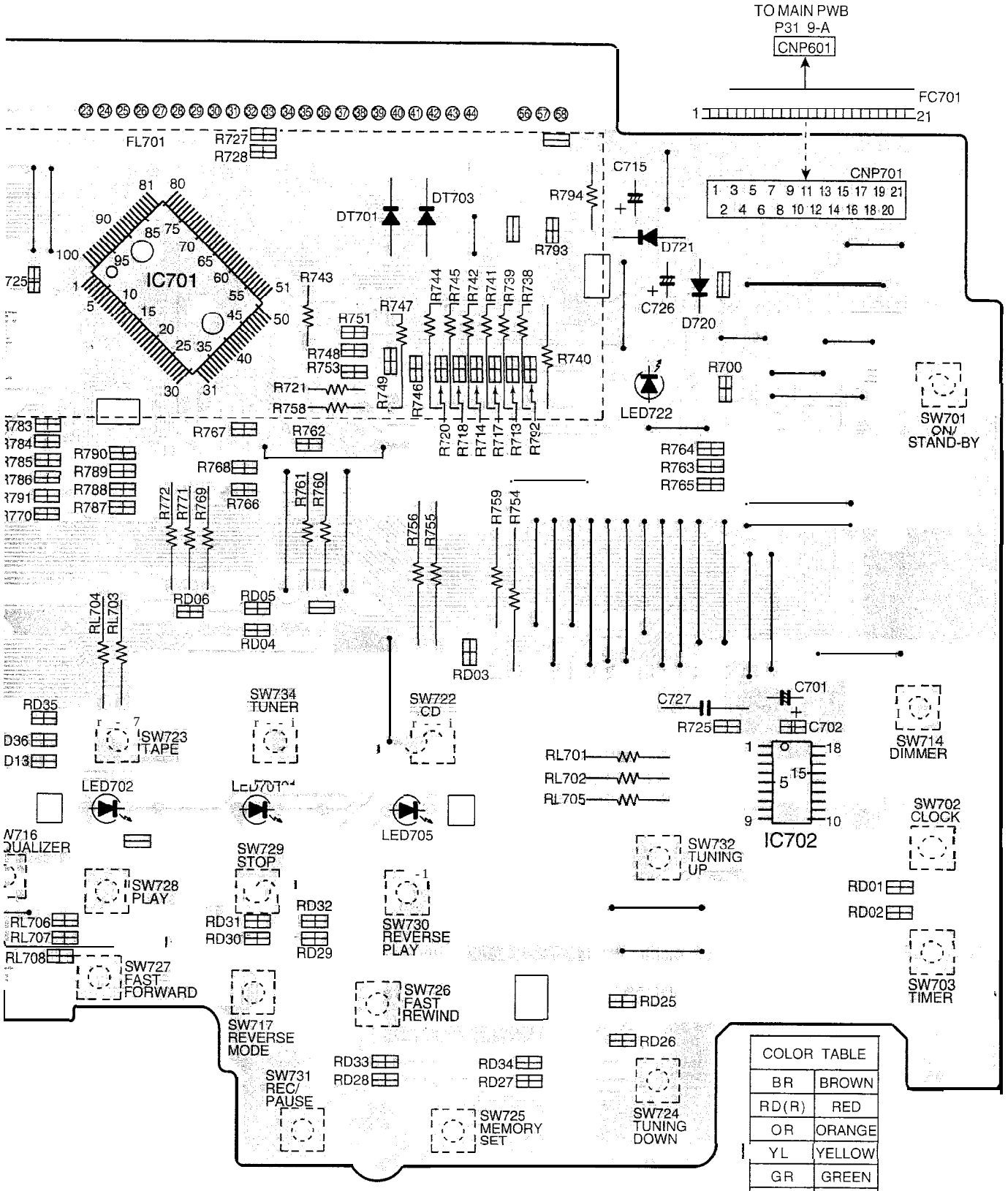


Figure 32 WIRING SIDE OF P.W.BOARD (4/9)



COLOR TABLE	
BR	BROWN
RD(R)	RED
OR	ORANGE
YL	YELLOW
GR	GREEN
BL	BLUE
VL	VIOLET
GY	GRAY
WH(W)	WHITE
BK	BLACK
PK	PINK

7	8	9	10	11	12

Figure 33 WIRING SIDE OF P.W.BOARD (5/9)

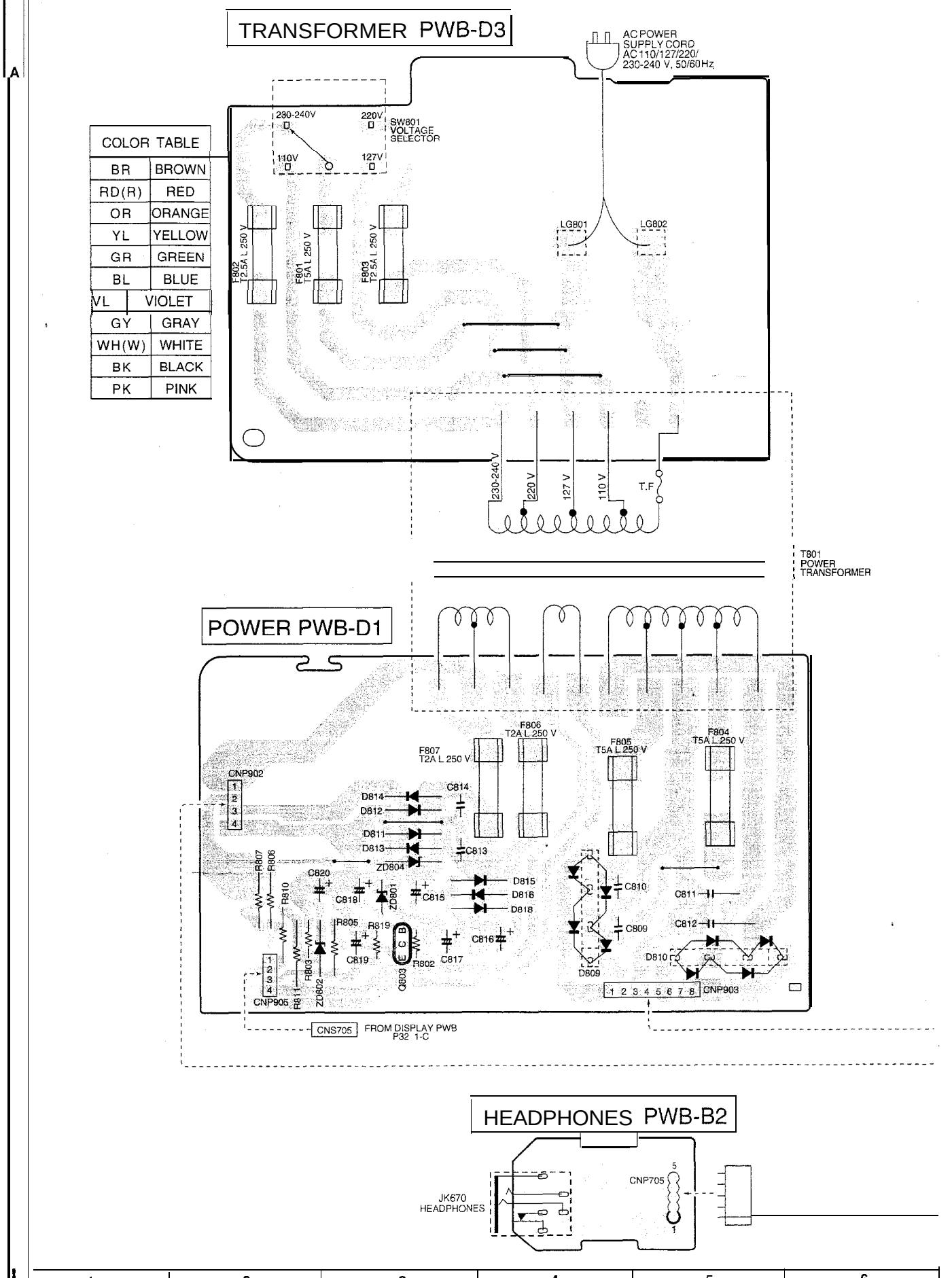
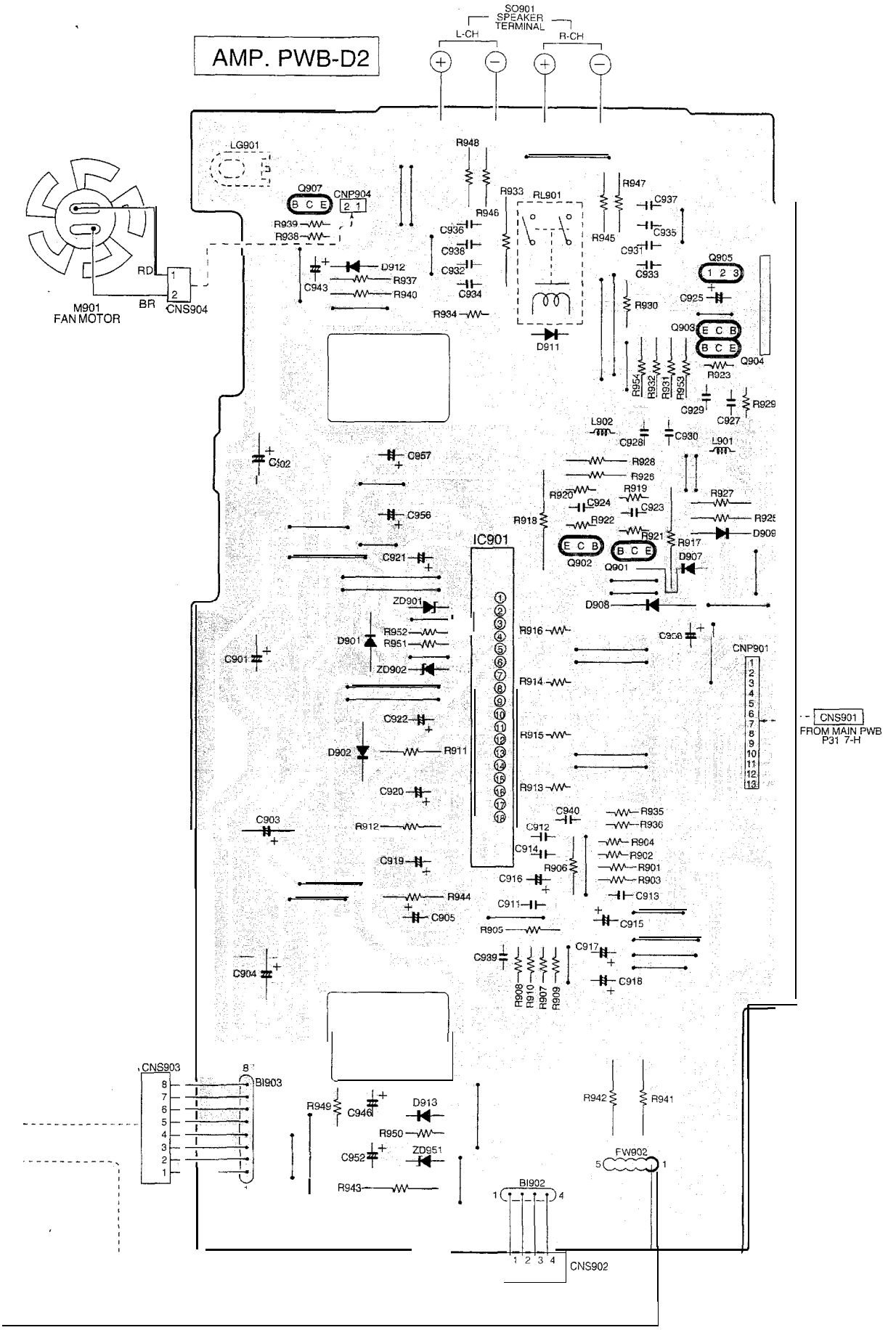
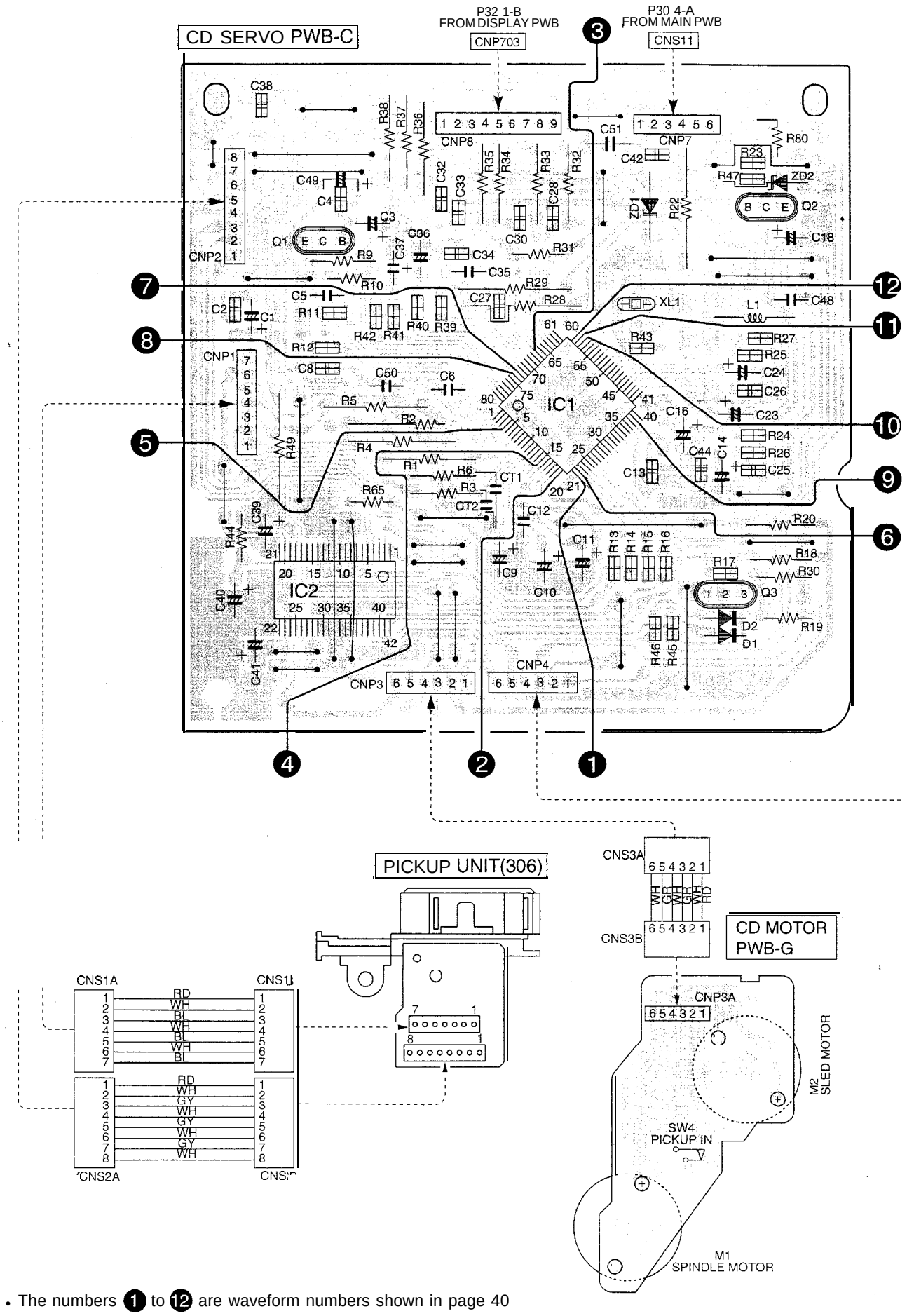


Figure 34 WIRING SIDE OF P.W.BOARD (6/9)



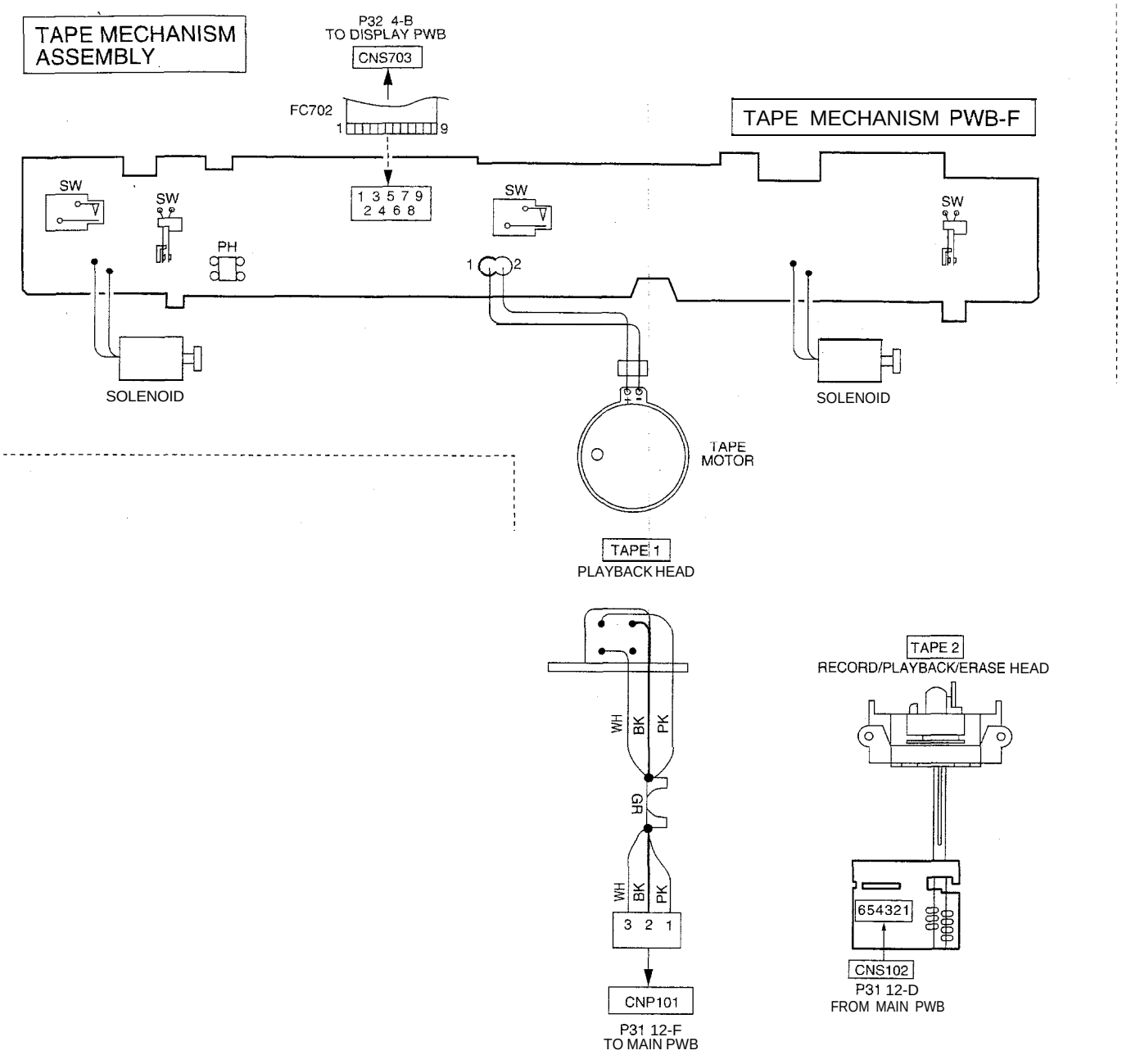
7	8	9	10	11	12

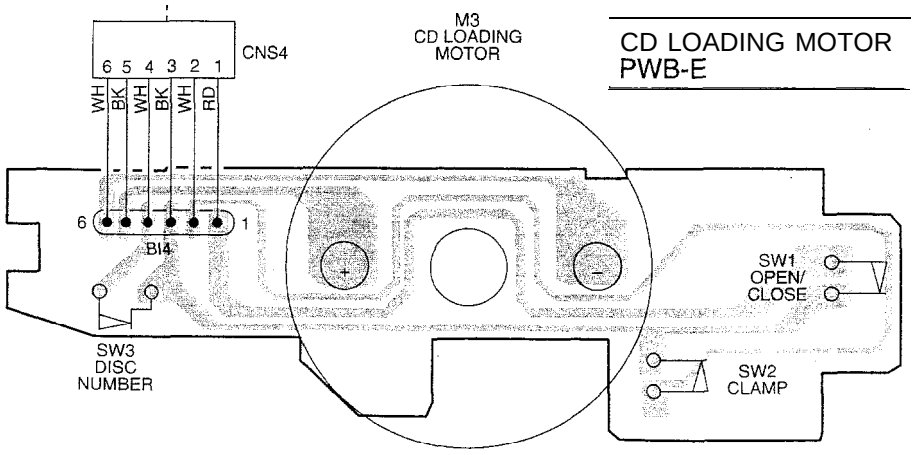
Figure 35 WIRING SIDE OF **P.W.BOARD(7/9)**



• The numbers ❶ to ⓬ are waveform numbers shown in page 40

Figure 36 WIRING SIDE OF P.W.BOARD (8/9)





COLOR TABLE	
BR	BROWN
RD(R)	RED
OR	ORANGE
YL	YELLOW
GR	GREEN
BL	BLUE
VL	VIOLET
GY	GRAY
WH(W)	WHITE
BK	BLACK
PK	PINK

Figure 37 WIRING SIDE OF P.W.BOARD (9/9)

VOLTAGE

IC1

PIN NO.	VOLTAGE	PIN NO.	VOLTAGE
1	1.6 V	41	3.7 V
2	1 V	42	3.7 V
3	1.6 V	43	0 V
4	1.8 V	44	0 V
5	3.3 V	45	3.7 V
6	0 V	46	3.2 V
7	1.6 V	47	3.2 V
8	1.6 V	48	3.2 V
9	1.6 V	49	0 V
10	1.6 V	50	0 V
11	1.6 V	51	0 V
12	1.6 V	52	3.2 V
13	1.5 V	53	0 V
14	1.5 V	54	0 V
15	1.5 V	55	0 V
16	1.5 V	56	0 V
17	0.8 V	57	0 V
18	3.2 V	58	3.2 V
19	0 V	59	0 V
20	1.6 V	60	0 V
21	1.6 V	61	0 V
22	1.6 V	62	4.7 V
23	1.6 V	63	0 V
24	0 V	64	4.9 V
25	0 V	65	4.9 V
26	3.2 V	66	4.9 V
27	0 V	67	0 V
28	0 V	68	4.9 V
29	0 V	69	0 V
30	0 V	70	0 V
31	0 V	71	0 V
32	0 V	72	0 V
33	0 V	73	0 V
34	0 V	74	0 V
35	1.6 V	75	0 V
36	0 V	76	3.2 V
37	0 V	77	3.2 V
38	3.2 V	78	3.2 V
39	3.2 V	79	0 V
40	0 V	80	3.2 V

IC2

PIN NO.	VOLTAGE
1	1.7 V
2	1.7 V
3	1.8 V
4	2.1 V
5	2.1 V
6	2.1 V
7	2 V
8	0 V
9	0 V
10	0 V
11	0 V
12	0 V
13	0 V
14	0 V
15	2.1 V
16	2.1 V
17	1.6 V
18	4.9 V
19	3 V
20	1.6 V
21	0 V
22	0 V
23	4.9 V
24	4.9 V
25	1.6 V
26	2.1 V
27	2.1 V
28	0 V
29	0 V
30	0 V
31	0 V
32	0 V
33	0 V
34	0 V
35	0 V
36	4.2 V
37	0 V
38	2.1 V
39	2.1 V
40	4.9 V
41	3.7 V
42	3.7 V

Q850

PIN NO.	VOLTAGE
1	12.93 V
2	12.31 V
3	22.1 V

Q851

PIN NO.	VOLTAGE
1	21.4 V
2	0 V
3	10.1 V

Q852

PIN NO.	VOLTAGE
1	11.1 V
2	0 V
3	5 V

IC301

PIN NO.	VOLTAGE
1	0 V
2	0 V
3	0.3 V
4	0 V
5	0 V
6	0 V
7	0 V
8	0 V
9	0 V

IC903

PIN NO.	VOLTAGE
1	5 V
2	5 V
3	5 V
4	0 V
5	5 V
6	5 V
7	5 V
8	10 V

IC101

PIN NO.	VOLTAGE
1	0 V
2	0 V
3	0.5 V
4	2 V
5	0 V
6	1.3 V
7	0 V
8	0.6 V
9	3.5 V
10	3.4 V
11	0 V
12	0 V
13	7 V
14	4.1 V
15	0 V
16	3.4 V
17	0.6 V
18	0 V
19	0.7 V
20	0 V
21	2 V
22	0.5 V
23	0 V
24	0 V

IC303

PIN NO.	VOLTAGE
1	2.1 V
2	5 V
3	2.1 V
4	2.1 V
5	0 V
6	5.1 V
7	5.1 V
8	2.9 V
9	5 V
10	4.3 V
11	3.9 V
12	3.9 V
13	3.5 V
14	1.3 V
15	1.3 V
16	2.1 V
17	2.4 V
18	2.3 V
19	0 V
20	0.4 V
21	2.7 V
22	2.7 V
23	5 V
24	3.5 V

IC901

PIN NO.	VOLTAGE
1	60.8 V
2	26.8 V
3	26.8 V
4	-26.7 V
5	-26.7 V
6	-60.8 V
7	0 V
8	0 V
9	0 V
10	0 V
11	0 V
12	-59 V
13	59.4 V
14	0 V
15	0 V
16	-58 V
17	0 V
18	0 V

CNP903

PIN NO.	VOLTAGE
1	-26.4 V
2	26.5 V
3	0 V
4	0 V
5	-60.2 V
6	0 V
7	60.3 V
8	60.3 V

IC601

PIN NO.	VOLTAGE
1	0 V
2	0 V
3	0 V
4	5.3 V
5	5.3 V
6	5 V
7	5 V
8	5.3 V
9	5 V
10	5 V
11	5 V
12	5 V
13	5 V
14	5 V
15	5 V
16	5 V
17	5 V
18	5 V
19	5 V
20	5 V
21	5 V
22	5 V
23	10.2 V
24	0 V

ICK1

PIN NO.	VOLTAGE
1	0.81 V
2	1 V
3	0.75 V
4	2.5 V
5	4.6 V
6	2.5 V
7	2.5 V
8	2.5 V
9	2.5 V
10	2.5 V
11	2.5 V
12	2.5 V
13	2.5 V
14	2.5 V
15	2.5 V
16	2.5 V
17	2.5 V
18	2.5 V
19	2.5 V
20	0.5 V
21	2.5 V
22	0 V
23	5 V
24	0 V
25	2.5 V
26	2.5 V
27	2.5 V
28	2.5 V
29	2.5 V
30	2.5 V
31	2.5 V
32	2.5 V
33	2.5 V
34	2.5 V
35	2.5 V
36	2.5 V
37	2.5 V
38	0 V
39	0 V
40	0 V
41	0 V
42	0 V

CNP901

PIN NO.	VOLTAGE
1	0 V
2	0 V
3	0 V
4	0 V
5	21.7 V
6	0 V
7	10.4 V
8	12.25 V
9	-13.25 V
10	0 V
11	3.88 V
12	4.38 V
13	5.02 V

IC701

PIN NO.	VOLTAGE	PIN NO.	VOLTAGE
1	4.23 V	51	0 V
2	4.14 V	52	0 V
3	0 V	53	4.6 V
4	0 V	54	5 V
5	4.15 V	55	5 V
6	4.2 V	56	5 V
7	4.2 V	57	0 V
8	0 V	58	0 V
9	0 V	59	-33.1 V
10	4.23 V	60	0 V
11	2.34 V	61	0 V
12	1.86 V	62	0 V
13	0 V	63	0 V
14	3.87 V	64	0 V
15	4.45 V	65	0 V
16	0 V	66	0 V
17	0 V	67	-37.4 V
18	0 V	68	-32.6 V
19	0 V	69	-32.7 V
20	0 V	70	-29.8 V
21	0 V	71	-29.9 V
22	0 V	72	-32.7 V
23	0 V	73	-19.2 V
24	0 V	74	-22 V
25	0 V	75	-32.8 V
26	4.63 V	76	-30.1 V
27	4.23 V	77	-32.8 V
28	0 V	78	-17.6 V
29	0 V	79	-32.8 V
30	0 V	80	-32.3 V
31	4.48 V	81	-24.9 V
32	4.25 V	82	-19.5 V
33	4.5 V	83	-22.2 V
34	4.3 V	84	-33 V
35	4.44 V	85	-33 V
36	2.13 V	86	-19.6 V
37	4.88 V	87	-19.6 V
38	4.9 V	88	-14.41 V
39	4.36 V	89	-22.8 V
40	0 V	90	-27.2 V
41	0 V	91	-27.2 V
42	12.66 V	92	-27.5 V
43	12.78 V	93	-27.7 V
44	12.3 V	94	-27.7 V
45	4.9 V	95	-27.7 V
46	4.42 V	96	-27.6 V
47	4.33 V	97	-27.7 V
48	4.32 V	98	-27.7 V
49	4.48 V	99	-27.7 V
50	4.78 V	100	-30.2 V

IC702

PIN NO.	VOLTAGE
1	0 V
2	0 V
3	0 V
4	0 V
5	8.56 V
6	8.54 V
7	0 V
8	0 V
9	8.59 V
10	8.57 V
11	8.56 V
12	8.56 V
13	8.71 V
14	8.72 V
15	0 V
16	0 V
17	0 V
18	5.1 V

CNP902

PIN NO.	VOLTAGE
1	11.1 V
2	0 V
3	21.9 V
4	0 V

CNP905

PIN NO.	VOLTAGE
1	1.95 V
2	-26.3 V
3	-32.8 V
4	-26.3 V

IC704

PIN NO.	VOLTAGE
1	0 V
2	0 V
3	0 V
4	-10.96 V
5	0 V
6	0 V
7	0 V
8	6.41 V

IC703

PIN NO.	VOLTAGE
1	0.2 V
2	0.2 V
3	0.2 V
4	-11 V
5	0 V
6	0 V
7	0 V
8	6.44 V

IC860

PIN NO.	VOLTAGE
1	-10.34 V
2	3.22 V
3	0.6 V
4	-12.2 V
5	0 V
6	0.4 V
7	-10.9 V
8	10.1 V

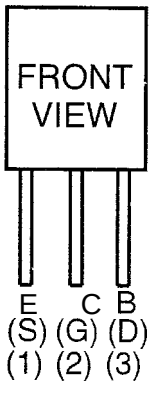
NOTES ON SCHEMATIC DIAGRAM

- Resistor:
  To differentiate the units of resistors, such symbol as K and M are used: the symbol K means 1000 ohm and the symbol M means 1000 kohm and the resistor without any symbol is ohm-type resistor. Besides, the one with "Fusible" is a fuse type.
- Capacitor:
  To indicate the unit of capacitor, a symbol P is used: this symbol P means pico-farad and the unit of the capacitor without such a symbol is microfarad. As to electrolytic capacitor, the expression "capacitance/withstand voltage" is used.
  (CH), (TH), (RH), (UJ): Temperature compensation
  (ML): Mylar type
  (P.P.): Polypropylene type
- Schematic diagram and Wiring Side of P.W.Board for this model are subject to change for improvement without prior notice.
- The indicated voltage in each section is the one measured by Digital Multimeter between such a section and the chassis with no signal given.
  1. In the tuner section,
     indicates AM
     indicates FM stereo
  2. In the main section, a tape is being played back.
  3. In the deck section, a tape is being played back.
     ( ) indicates the record state.
  4. In the power section, a tape is being played back.
  5. In the CD section, the CD is stopped.
- Parts marked with "⚠"(⚠) are important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

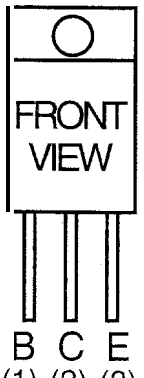
REF. NO	DESCRIPTION	POSITION
SW1	OPEN/CLOSE	ON—OFF
SW2	CLAMP	ON—OFF
SW3	DISC NUMBER	ON—OFF
SW4	PICKUP IN	ON—OFF
SW601	SPAN SELECTOR	9 kHz/50 kHz
SW701	ON/STAND-BY	ON—OFF
SW702	CLOCK	ON—OFF
SW703	TIMER	ON—OFF
SW709	DISC 1	ON—OFF
SW710	DISC 2	ON—OFF
SW711	DISC 3	ON—OFF
SW712	DISC SKIP	ON—OFF
SW713	OPEN/CLOSE	ON—OFF
SW714	DIMMER	ON—OFF
SW715	MONSTER BASS	ON—OFF
SW716	EQUALIZER	ON—OFF

REF. NO	DESCRIPTION	POSITION
SW717	REVERSE MODE	ON—OFF
SW722	CD	ON—OFF
SW723	TAPE	ON—OFF
SW724	TUNING/DOWN	ON—OFF
SW725	MEMORY SET	ON—OFF
SW726	FAST REWIND	ON—OFF
SW727	FAST FORWARD	ON—OFF
SW728	PLAY	ON—OFF
SW729	STOP	ON—OFF
SW730	REVERSE PLAY	ON—OFF
SW731	REC/PAUSE	ON—OFF
SW732	TUNING UP	ON—OFF
SW733	VIDEO	ON—OFF
SW734	TUNER	ON—OFF
SW801	VOLTAGE SELECTOR	230-240 V

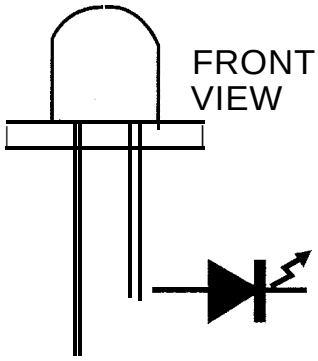
TYPES OF TRANSISTOR AND LED



KTA1 266 GR KTC3203 Y
KTA1273 Y KRC102 M
KTA1274 Y KRC104 M
KTC3194 Y KRC107 M
KTC3199 GR 2SA1015 GR
2SC1845 F



KTC2026
KIA7810 AP
KIA7805 AP

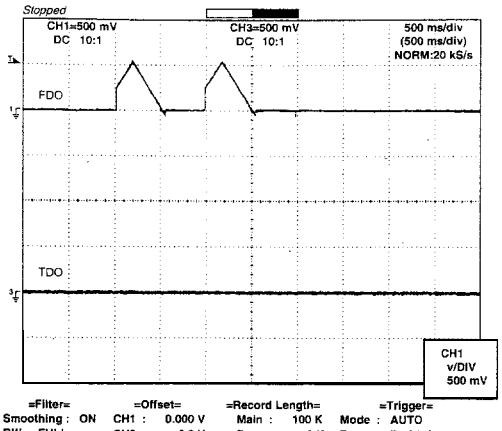


4204S RT7
4204UYT7
4204UGT7
31 URT21

WAVEFORMS OF CD CIRCUIT

1 IC1 (21)

2 IC1 (20)

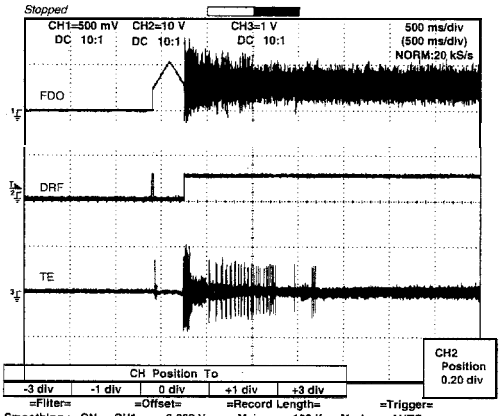


=Filter=	=Offset=		=Record Length=		=Trigger=	
Smoothing : ON	CH1 :	0.000 V	Main :	100 K	Mode :	AUTO
BW : FULL	CH2 :	0.0 V	Zoom :	2 K	Type :	EDGE CH1
	CH3 :	0.000 V			Delay :	0.0 ns
	CH4 :	0.00 V			Hold off :	0.2 µs

1 IC1 (21)

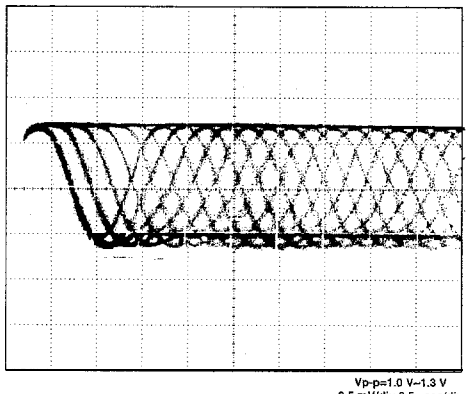
3 IC1 (67)

4 IC1 (15)



=Filter=	=Offset=		=Record Length=		=Trigger=	
Smoothing : ON	CH1 :	0.000 V	Main :	100 K	Mode :	AUTO
BW : FULL	CH2 :	0.0 V	Zoom :	2 K	Type :	EDGE CH1
	CH3 :	0.00 V			Delay :	0.0 ns
	CH4 :	0.00 V			Hold off :	0.2 µs

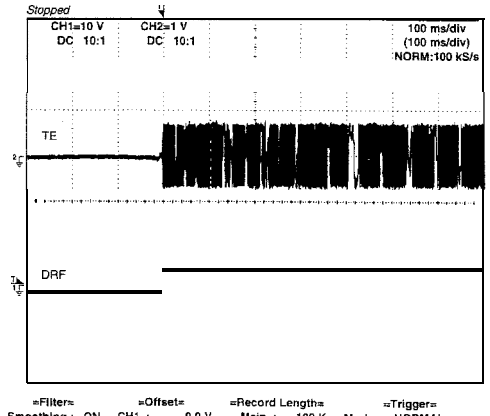
5 IC1 (4)



Vp-p=1.0 V–1.3 V
0.5 mV/div,0.5 µsec/div

4 IC1 (15)

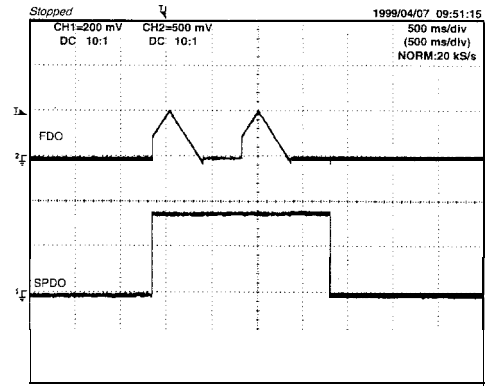
3 IC1 (67)



=Filter=	=Offset=		=Record Length=		=Trigger=	
Smoothing : ON	CH1 :	0.0 V	Main :	100 K	Mode :	NORMAL
BW : FULL	CH2 :	0.00 V	Zoom :	2 K	Type :	EDGE CH1
	CH3 :	0.00 V			Delay :	2.924 ms
	CH4 :	0.00 V			Hold off :	0.2 µs

1 IC1 (21)

6 IC1 (22)

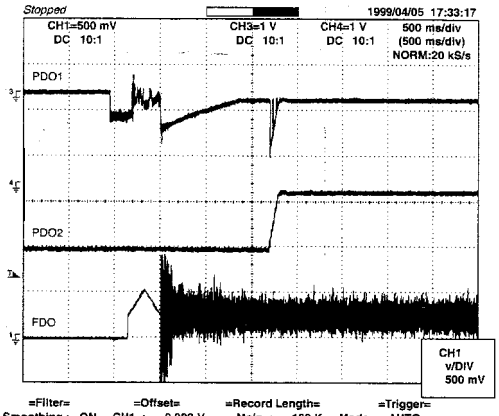


=Filter=	=Offset=		=Record Length=		=Trigger=	
Smoothing : ON	CH1 :	0.000 V	Main :	100 K	Mode :	NORMAL
BW : FULL	CH2 :	0.000 V	Zoom :	2 K	Type :	EDGE CH2
	CH3 :	0.00 V			Delay :	2.924 ms
	CH4 :	0.00 V			Hold off :	0.2 µs

7 IC1 (73)

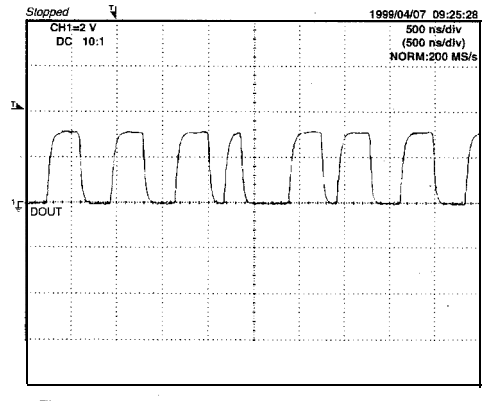
8 IC1 (74)

1 IC1 (21)



=Filter=	=Offset=		=Record Length=		=Trigger=	
Smoothing : ON	CH1 :	0.000 V	Main :	100 K	Mode :	AUTO
BW : FULL	CH2 :	0.0 V	Zoom :	2 K	Type :	EDGE CH2
	CH3 :	0.00 V			Delay :	0.0 ns
	CH4 :	0.00 V			Hold off :	0.2 µs

9 IC1 (39)

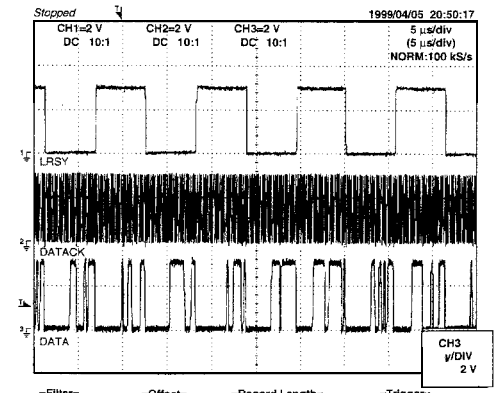


=Filter=	=Offset=		=Record Length=		=Trigger=	
Smoothing : ON	CH1 :	0.00 V	Main :	1 K	Mode :	NORMAL
BW : FULL	CH2 :	0.00 V	Zoom :	100	Type :	EDGE CH1
	CH3 :	0.00 V			Delay :	2.887 ms
	CH4 :	0.00 V			Hold off :	0.2 µs

10 IC1 (58)

11 IC1 (59)

12 IC1 (60)



=Filter=	=Offset=		=Record Length=		=Trigger=	
Smoothing : ON	CH1 :	0.00 V	Main :	5 K	Mode :	AUTO
BW : FULL	CH2 :	0.00 V	Zoom :	100	Type :	EDGE CH3
	CH3 :	0.00 V			Delay :	0.0 ns
	CH4 :	0.00 V			Hold off :	0.2 µs

TROUBLESHOOTING

When the CD does not function

When the CD section does not operate when the objective lens of the optical pickup is dirty, this section may not operate. Clean the objective lens, and check the playback operation. When this section does not operate even after the above step is taken, check the following items.
Remove the cabinet and follow the trouble shooting instructions..
"Track skipping and/or no TOC (Table Of Contents) may be caused by build up of dust other foreign matter on the laser pickup lens. Before attempting any adjustment make certain that the lens is clean. If not, clean it as mentioned below."

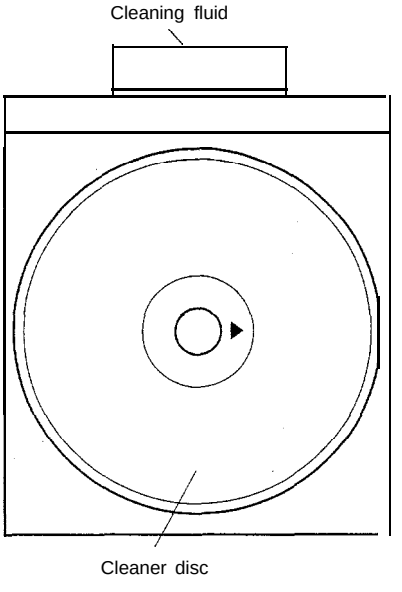
Turn off the power, and wipe the lens softly using a cleaning paper moistened with commercially available cleaning solution so as not to damage it. Be careful not to touch the lens with bare hands.

Dust gradually accumulates on the objective lens during use, and it may degrade performance. To avoid this problem, use a cleaning disc designed for CD optical pickup lenses..

		Parts code
1.	CD optical pickup Lens cleaner disc	UDSKA0004AFZZ

HOW TO USE

1. Using the brush in the cleaner cap, apply 1 or 2 drops of the cleaning fluid to the brush on the CD cleaner disc which has the mark next to it.
2. Place the CD cleaner disc onto the CD disc tray with the brush side down,then press the play button.
3. You will hear music for about 20 seconds and the CD player will automatically stop. If it continuous to turn, press the stop button.



CAUTION

- The CD lens cleaner should be effective for 30-50 operations, however if the brushes become worn out earlier then please the cleaner disc.
- If the CD cleaner brushes become very wet then wipe off any excess fluid with a soft cloth.
- Do not drink the cleaner fluid or allow it to come in contact with the eyes. In the event of this happening then drink and/or rinse with clean water and seek medical advice.
- The CD cleaner disc must not be used on car CD players or on computer CD-ROM drives.
-

When a CD cannot be played

1. "E-CD01" is displayed.

(1) Check the power to IC1(LC78645E), the presence of the clock signal (33.8688 MHz) and the status of the RESET terminal (pin 66 on ICI).
(2) Does the pickup move to the PICKUP-IN Switch (SW4) position?

If (1) and (2) are OK, check the system microcomputer (especially the communication line with the DSP).

2. Pressing the CD operation key is accepted, but playback does not occur.

(1) Focus-HF system check
(2) Tracking system check
(3) Spin system check
(4) PLL system check
(5) Others

(1) Focus-HF system check.

Although a CD is inserted and the cover is closed, "NO DISC" is displayed.

Press the OPEN/CLOSE switch (SW1) without inserting a disc, and try starting the playback operation.

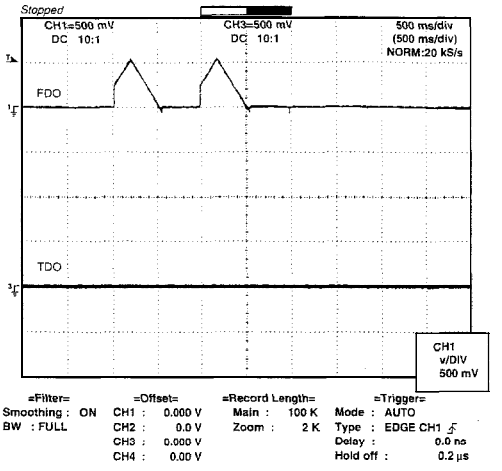


Figure 42-1

1. Does the pickup move to the PICKUP-IN Switch (SW4) oosition ?
   - No → Sled motor (M2).
   - Yes ↓
2. Does the focus (lens) move up and down ? (Waveform drawing Figure 42-l)
   - No → Check the focus peripheral circuit.
   - Yes ↓
3. Is the laser lit ?
   - No → Check the laser diode driver Q1 peripheral circuit.
   - Yes ↓
4. Is the turntable rotating ?
   - No → Spindle motor (MI).
   - Yes ↓

When a disc is loaded, start playback operation.

1. Is focus servo activated ? (Waveform drawing Figure 42-2)
   - No → Pins 7-12, 79 and 80 on IC1 Check the laser diode driver Q1 peripheral circuit.
   - Yes ↓
2. Does DRF change from "L" to "H" ?
   - No → Is the disc rotating ?
     - No → Check the spin system.
     - Yes → If the disc is spinning and a HF waveform is generated, DRF will go H.
   - Yes ↓
3. Is the HF waveform normal ? (Waveform drawing Figure 42-3)
   - No → If the level is not normal.

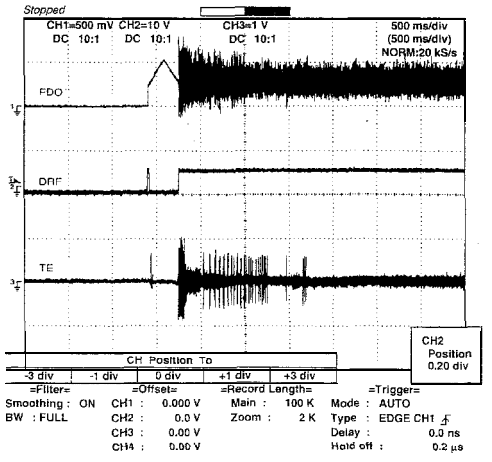


Figure 42-2

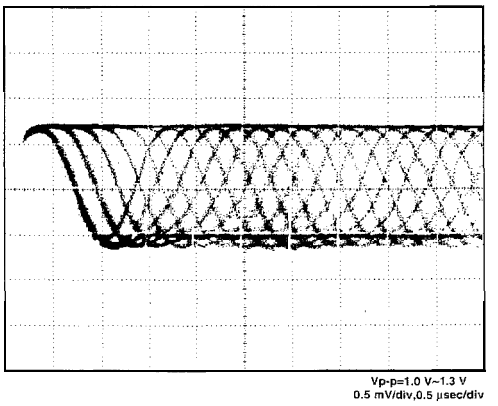


Figure 42-3

(2) Tracking system check.

Check the TE waveform at pin 15 on IC1.

If the waveform shown in Figure 43-1 appears and soon after NO DISC appears ?

Yes → The tracking servo is not activated. Check the peripheral circuits at pins 14, 15 and 20 on IC1, and CNS1A/B.

No ↓

"Initialization" is possible, but play is not possible ?

Yes → A normal jump operation cannot be completed or the beginning of the track cannot be found. Check the around pin 20 on IC1.

No ↓

"Initialization" is not possible. → Data cannot be read. Check the VCO-PLL system.

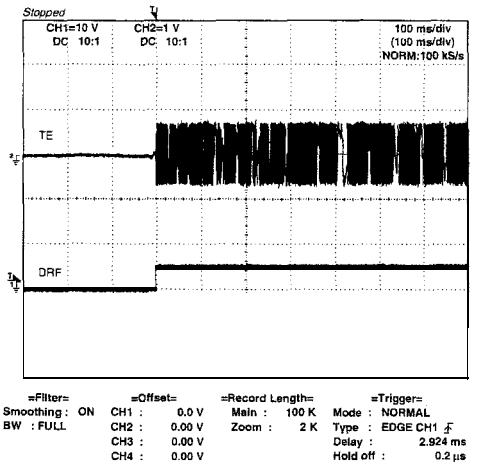


Figure 43-1

(3) Spin system check.

Press the OPEN/CLOSE switch without inserting a disc, and then try starting the play operation.

1. The turntable rotates a little ? (Waveform drawing -- The Figure 43-2)

Yes → spin driver circuit is OK.

No ↓

2. The turntable doesn't rotate. → Check around pin 22 on IC1, pins 15 and 16 on IC3, and CNS3A/B.

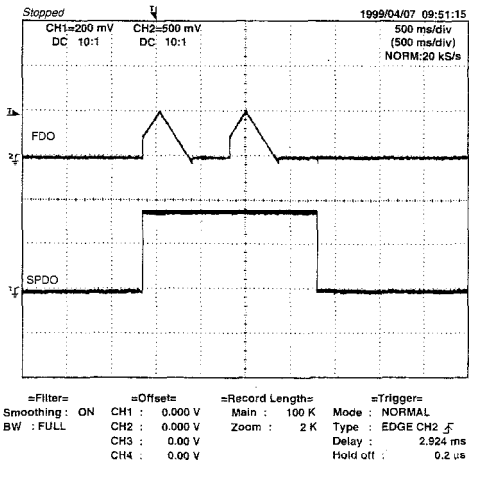


Figure 43-2

(4) PLL system check.

When a disc is loaded, start play operation.

↓

The HF waveform is normal, but the TOC data cannot be read.

↓

Check the PDO waveform. (Figure 44-l)

↓

Check around pins 73-78 on IC1.

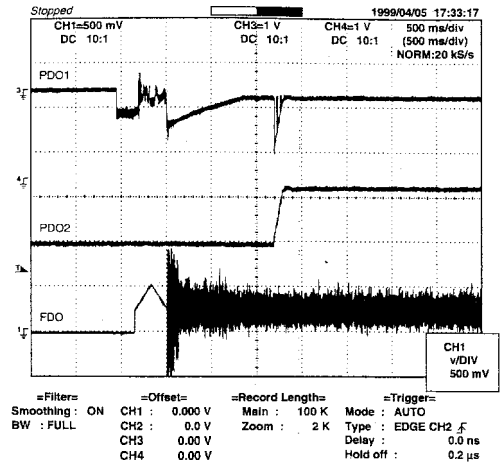


Figure 44-1

(5) Others.

The HF waveform is normal and the time is displayed normally, but no sound is produced. Or the sound has dropouts.

Is pin 52 (C2F) on IC1 "L" ?

No → There are too many error flags on a damaged disc which makes error correction impossible.

↓

Check again using a known good disc.

Yes

↓

1. When playing at normal speed.
   Check the peripheral circuit at pin 39 (DOUT) on IC1 and the waveform (Figure 44-2).

↓

If OK. Check the unit.

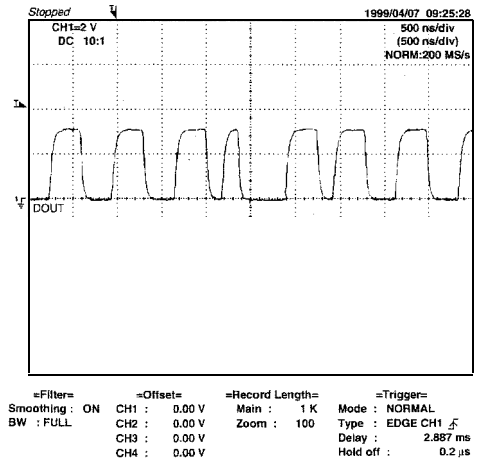


Figure 44-2

FUNCTION TABLE OF IC

IC1 VHiLC78645E-1: CD Servo (LC78645E) (1/2)

Pin No.	Terminal Name	Input/Output	Setting in Reset	Function	
1	SLCO	Output	—	For slice level control.	Control output.
2	SLCIST	Input	—		Resistor connection terminal for SLCO output current setting.
3	EFMIN	Input	—		RF signal input terminal.
4	RF	Output	—	RF signal monitor terminal.	
5	RFVDD	Input	—	RF power terminal.	
6	RFVSS	—	—	RF earth terminal. To be connected to 0 V.	
7	FIN1	Input	—	A+C signal input terminal.	
8	FIN2	Input	—	B+D signal input terminal.	
9	TIN1	Input	—	E signal input terminal.	
10	TIN2	Input	—	F signal input terminal.	
11	VREF	output	RFVDD/2	VREF voltage output terminal.	
12	REFI	Input	—	Reference supply setting terminal.	
13'	FE	output	ZHI	FE signal monitor terminal.	
14	TEC	output	—	LPF capacitor connection terminal for TE signal.	
15*	TE	output	ZHI	TE signal monitor terminal.	
16	RFMON	output	ZHI	RF internal signal monitor terminal.	
17	JITTC	—	—	Capacitor connection terminal for jitter detection.	
18	ADAVDD	Input	—	Power terminal for servo A/D, D/A.	
19	ADAVSS	—	—	Earth terminal for serve A/D. D/A. To be connected to 0 V.	
20	TDO	Output	ADAVDD/2	Output terminal for tracking control. D/A output.	
21	FDO	Output	ADAVDD/2	Output terminal for focus control. D/A output.	
22	SPDO	Output	ADAVDD/2	Output terminal for spindle control. D/A output.	
23	SLDO	Output	ADAVDD/2	Output terminal for sled control. D/A output.	
24*	GPDAC	output	ADAVDD/2	Servo D/A general-purpose output terminal.	
25	CONT4	Input/Output	Input Mode	General-purpose I/O terminal 4.	Controlled by commands from the microcomputer. When not used, set them as input terminals and connect to 0 V, or set them as output terminals and leave open.
26	CONT.5	Input/Output	Input Mode	General-purpose I/O terminal 5.	
27*	SBCK/CONT6	Input/Output	Input Mode	General-purpose I/O terminal 6 or Subcode reading clock input terminal.	
28	SBCK/FG	Input	—	Subcode reading clock input terminal/FG signal input terminal/external emphasis setting terminal. Terminal functions are set by commands. When not used, connect to 0 V.	
29*	DEFECT	output	L	Defect terminal.	
30*	V/*P	Output H	rough servo,	Auto switching monitor output terminal for rough servo phase control. "H": "L": phase servo.	
31*	FSEQ	output	L	Sync signal detection output terminal. The status changes to "H" when the sync signal detected in EFM and the sync signal of internal generation are identified.	
32'	MONI1	Output	L	Internal signal monitor terminal 1.	
33*	MONI2	output	L	Internal signal monitor terminal 2.	
34*	MONI3	output	L	Internal signal monitor terminal 3.	
35*	MONI4	output	L	Internal signal monitor terminal 4.	
36*	MONI5	output	L	Internal signal monitor terminal 5.	
37	vss	—	— ,	Digital system earth terminal. To be connected to 0 V.	
38	VDD	Input	—	Digital system power terminal.	
39*	DOUT	output	L	Digital OUT output terminal. (EIAJ format)	
40	TEST	Input	L	Input terminal for test. To be connected to 0 V.	
41	LVDD	Input	—	Left channel D/A converter	Power supply for Left channel.
42	LCHO	output	LVDDM		Left channel output.
43	LVSS	—			GND for Left channel. Must be connected to 0 V.

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

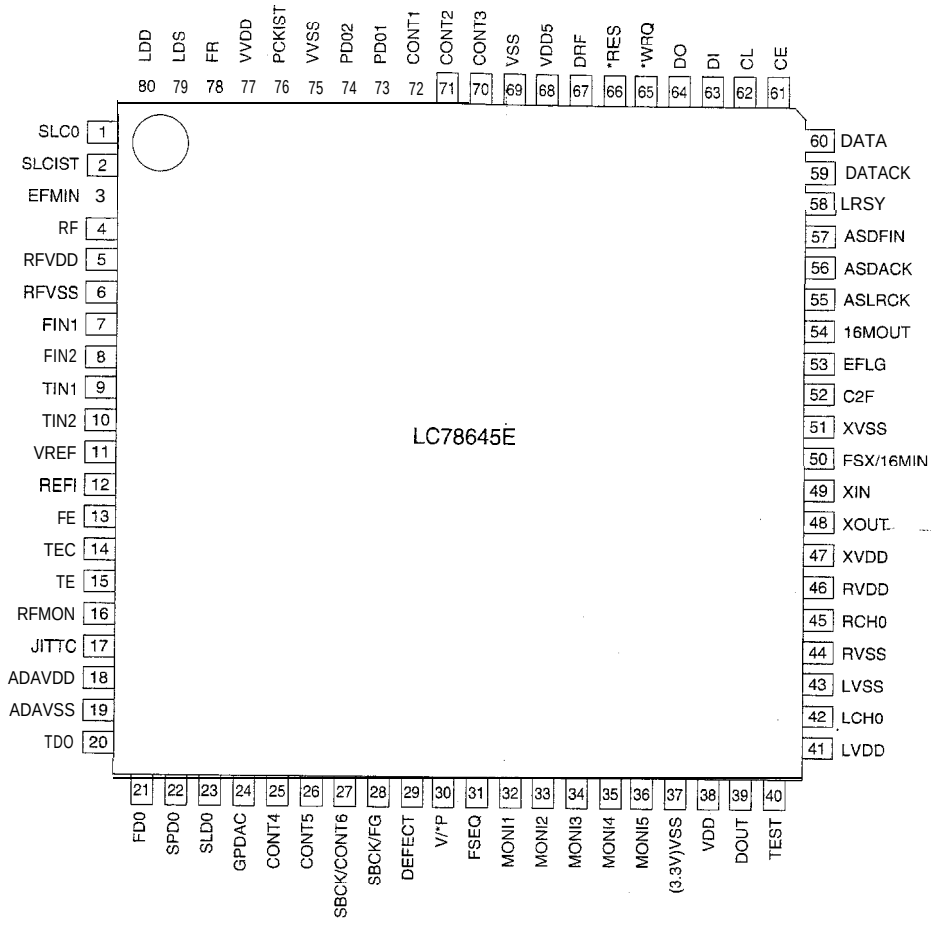
IC1 VHiLC78645E-1: CD Servo (LC78645E) (2/2)

Pin No.	Terminal Name	Input/Output	Setting in Reset	Function	
44	RVSS	—	—	Right channel D/A converter	GND for Right channel. Must be connected to 0 V.
45	RCHO	Output	LVDD /2		Right channel output.
46	RVDD	Input	—		Power supply for Right channel.
47	XVDD	Input	—	Crystal Oscillator	Power supply for crystal oscillator.
48	XOUT	Output	—		Connected for the 33.8688 MHz crystal oscillator cement.
49	XIN	Input	—		
50	FSX/16MIN	Input/Output	Input	7.35 kHz Synchronization signal monitor port. or Clock input port for Digital filter & D/A	
51	XVSS	—	—	Crystal Oscillator	GND for crystal oscillator. Must be connected to 0 V.
52*	C2F	Output	H	C2 FLAG monitor port.	
53*	EFLG	Output	L	C1, C2 error corrected monitor port.	
54*	16MOUT	Output	Clock	16.9344 MHz output port.	
55	ASLRCK	Input	—	Anti-shock	Word clock input port. (If this port does not use, must be connect to 0 V.)
56	ASDACK	Input	—		Bit clock input port. (If this port does not use, must be connect to 0 V.)
57	ASDFIN	Input	—		Left/Right channel data input port. (If this port does not use, must be connect to 0 V.)
58*	LRSY	Output	L	Digital data	Word clock output port.
59*	DATACK	Output	L		Bit clock output port.
60*	DATA	Output	L		Left/Right channel data output port.
61	CE	Input	—	Microcomputer Interface	Chip enable signal input port.
62	CL	Input	—		Data transfer clock input port.
63	DI	Input	—		Data input port.
64	DO	Output	(H)		Data output port. (N-ch. open drain output.)
65	*WRQ	Output	H		Interruption signal output.
66	*RES	Input	—	Chip reset signal input port. This port must be set LOW after first applied power on.	
67	DRF	Output	L	Focus detection output port.	
68	VDD5	Input	—	Power supply for Microprocessor.	
69	VSS	—	—	GND for digital circuit. Must be connected to 0 V.	
70	CONT3	Input/Output	Input	General purpose port 1.	Controlled with serial data command from micro-computer. When not used, Genera' purpose input/ output terminal 7. set it as the input terminal and open it by connecting to 0 V, or set it as the output terminal and open it.
71	CONT2	Input/Output	Input	General purpose port 2.	
72*	CONT1	Input/Output	Input	General purpose port 3.	
73	PDO1	Output	—	PLL	Internal VCO control phase comparator output port 1.
74	PDO2	Output	Input		Internal VCO control phase comparator output port 2.
75	VVSS	—	—		GND for internal VCO. Must be connected to 0 V.
76	PCKIST	Input	—		PDO output current adjustment resistor connection port.
77	VVDD	Input	—		Power supply for internal VCO.
78	FR	Input	—		VCO frequency range adjustment port.
79	LDS	Input	—	LASER power detected signal input port.	
80	LDD	Output	—	LASER power control signal output port.	

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

Be sure to supply the same potential to each power terminal. (VVDD, ADAVDD, VDD, LVDD, RVDD, XVDD)
Terminal witch is controlled by the power terminal (VDD5V) for a microcomputer interface :
CE(61 pin), CL(62 pin), DI(63 pin), DO(64 pin), WRQ(65 pin), RES(66 pin), DRF(67 pin)

IC1 VHiLC78645E-1: CD Servo (LC78645E)



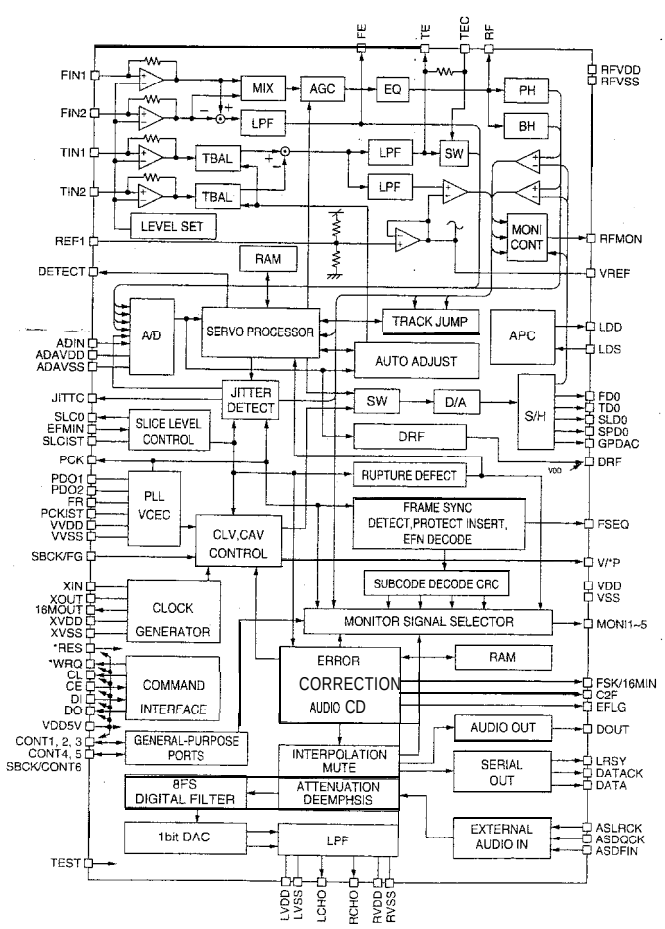


Figure 47 BLOCK DIAGRAM OF IC

IC701RH-iX0460AWZZ: System Microcomputer (IX0460AW) (1/2)

Pin No.	Port Name	Terminal Name	Input/Output	Function
1	VDD	VDD	Input	(+) Power supply.
2	P37	-20 dB ATT	Output	-20 dB attenuator.
3	P36	NO USE	Output	GND
		DSA_STB	Input/Output	DSA strube
4	P35	T_BIAS	Output	Tape record BIAS.
5	P34	T_T1/T2	Output	Tape T1/T2 change.
6	P33	REC/PLAY	Output	Tape REC/PLAY change.
7	P32	RES OUT	Output	CD DSP RESET & MPEG microcomputer reset.
8	P31	DRF	Input	CD RF level detection.
9	P30	WRQ	Input	CD DSP write request.
10	RESET	RESET	Input	Reset
11	X2	X2	Output	Main clock.
12	X1	X1	Input	Main clock.
13	VPP/IC	XVPP/IC	—	GND
14*	XT2	XT2	—	Open
15	P04	SPN	Input	Tuner span change.
16	VDD	VDD	Input	(+) Power supply.
17	P27	CD CLK	Output	CD DSP clock.
18	P26	CD DI	Output	CD DSP commsnd.
19	P25	CD DO	Input	CD DSP code Q out.
20	P24	CD CE	output	CD DSP CE output.
21	P23	CE	output	CE output.
22	P22	CLK	output	Clock output.
23	P21	DI	output	Data output.
24	P20	DO	Input	Data input.
25	AVSS	AVSS	—	Analog ground.
26	ANI7	O/C SW	Input	CD open/Close switch.
		DISC NO SW	Input	CD disc number switch.
		DSA_DATA	Input/Output	DS data input.
27	ANI6	NO USE	Input	GND.
		TUNER SM	Input	Tuner signal meter input.
		DSA_ACK	Input/Output	DSA acr.
28	ANI5	SPEANA 2	Input	Speana data input 16 kHz.
29	ANI4	SPEANA 1	Input	Speana data input 1kHz.
30	ANI3	SPEANA 0	Input	Speana data input 63 kHz.
31-33	ANI2-ANI0	KEY P-KEY 0	Input	Key input.
34	AVDD	AVDD	Input	Analog VDD.
35	AVREF	AVREF	Input	Analog REF voltage.
36	INTP3	P_IN	Input	Power failure detect.
37	P02	JOG 1	Input	JOG volume input 1.
38	P01	JOG 0	Input	JOG volume input 0.
39	INTP0	REMOCON	Input	Remocon input.
40	vss	vss	—	Ground voltage.
41	P74	SMUTE	output	System mute control.
42	P73	T-SOL-B	output	Tape 2 solenoid control.
43	P72	T-SOL-A	output	Tape 1 solenoid control.
44	P71	T-MOTOR	output	Tape motor control.
45	P70	TIMER LED	Output	Timer LED control.
46	VDD	VDD	Input	(+) Power supply.
47'	P127	AC RLY_CONT	output	AC relay control.
48	P126	SP-RLY	output	Speaker output relay control.
49	P125	SP_DET	Input	Speaker output detection.

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

IC701RH-iX0460AWZZ: System Microcomputer (IX0460AW) (2/2)

Pin No.	Port Name	Terminal Name	Input/Output	Function
50	P124	T 1 RUN	Input	Tape 1 run pulse imput.
51	P123	T 2 RUN	Input	Tape 2 run pulse input.
52	P122	CD CLAMP SW	Input	CD changer clamp switch.
53	P121	XBAS-MONST	Input	X-BASS/Monster ekchange control. L:X-BASS, H:Monster
54	P120	PLAY SW_B	Input	PLAY switch for T2.
55	P117	FPA	Input	Tape 2 A-SIDE full proof.
56	P116	FPB	Input	Tape 2 B-SIDE full proof.
57	P115	MIC SW	Input	Mic switch.
58	P114	LCKO	Output	LED driver lck.
59	P113	DISTOUT	Output	Destination output.
60	FIP39	NO USE	Output	GND
61	FIP38	KARAOKE LATCH	Output	Karaoke latch.
62	FIP37	NO USE	Output	GND
		MPEG_POW	Output	Mpeg power control.
63*	FIP36	NO USE	Output	GND
		RDS RST/ESS_ACE	Output	RDS fan reset/Dsa sys acenowledge.
64	FIP35	NO USE	Input	GND
		RDS RDDA/ESS_STB	Input	RDS transmit data input/dsa strobe.
65*	FIP34	NO USE	Output	GND
		RDS RDCL/ESS_DI	Output	RDS clock/Dsa data output.
66	FIP33	NO USE	Input	GND
		RDS READY/ESS_DO	Input	Ready/dsa data input.
67	P103	DIST3	Input	Destination input.
	FIP32	P22	Output	FL display driver.
68	P102	DIST2	Input	Destination input.
	FIP31	P21	output	FL display driver.
69	P101	DIST1	Input	Destination input.
	FIP30	P20	output	FL display driver.
70	PI 00	DIST0	Input	Destination input.
	FIP29	P19	Output	FL displav driver.
71-78	FIP28-FIP21	P18-P11	Output	FL displav driver.
79	VLOAD	VLOAD	Input	FL driver (-) power supp. -30 V
80-89	FIP20-FIP11	P10-P1	Output	FL display driver.
90-100	FIP10-FIP0	G11-G1	Output	FL display driver.

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

IC601 VHiLC75341/-1: Audio Processor (LC75341)

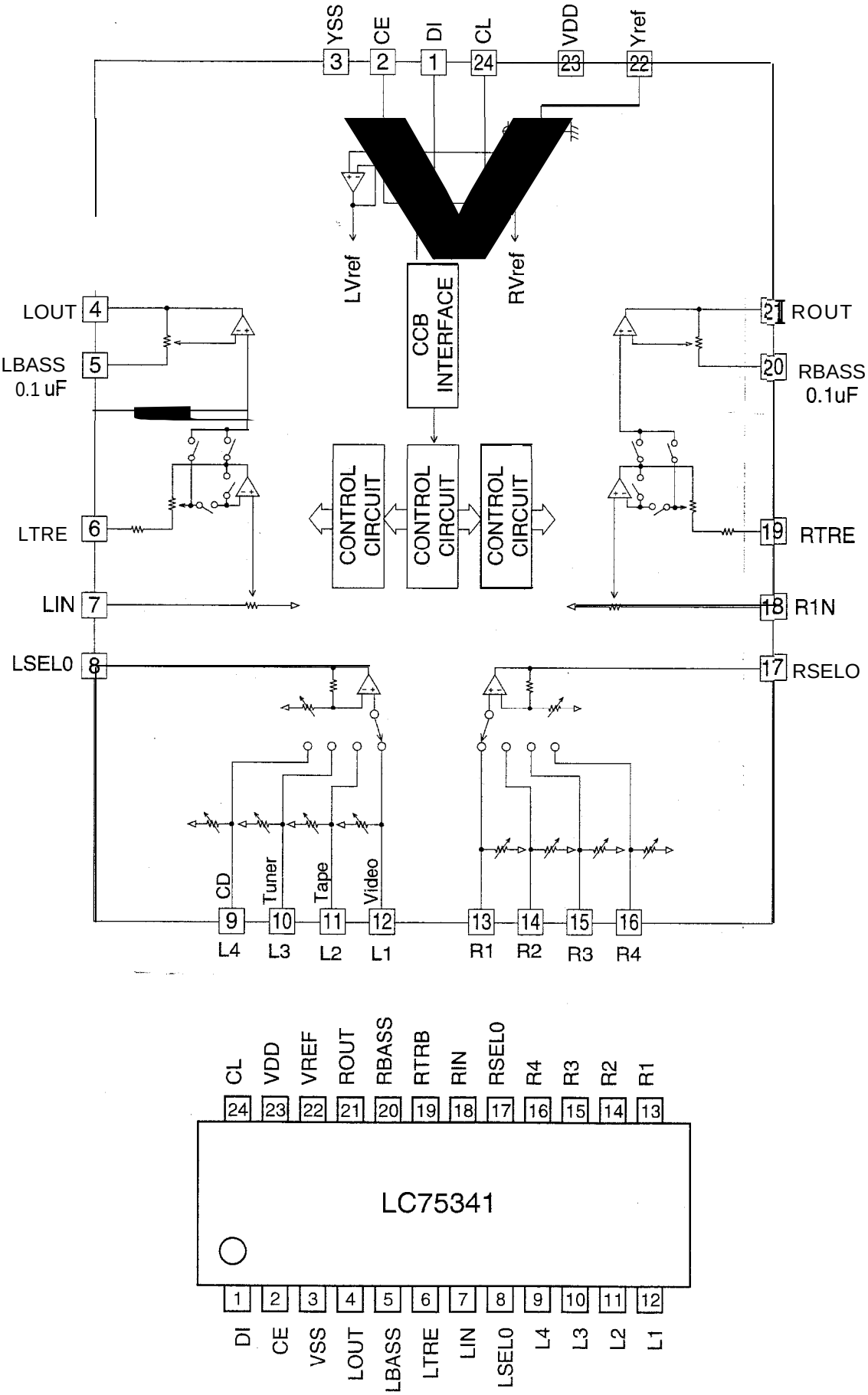


Figure 50 BLOCK DIAGRAM OF IC

ICK1 VHiM65856SP-1: Mic Amp. (M65856SP) (1/2)

Pin No.	Port Name	Input/Output	Function
1	MIC SW	Input	Microphone SW L: MIC OFF, H: MIC ON
2	MCLKCONT	—	Clock Control. Controls built-in clock generation circuit with external R.
3	VALC	—	ALC operating voltage setting terminal. To set ALC operating voltage according to applied voltage.
4	MIC1 IN	Input	Microphone 1 input. To connect MIC1.
5*	ALC1	—	ALC1 control. To connect ALC1attack/recovery time setting capacitor.
6*	MIC1NFIN	Input	Microphone 1 negative feedback input. To connect low cut-off frequency of MIC1 amplifier setting capacitor.
7'	MIC1 OUT	output	Microphone 1 output.
8	MIC1 VOLIN	Input	Microphone 1 volume input. To connect capacitor to reduce noise generated at time of volume change.
9	MIC2 IN	Input	Microphone 2 input. To connect MIC 2.
10	ALC2	—	ALC2 control. To connect ALC2 attack/recovery time setting capacitor.
11	MIC2 NFIN	Input	Microphone 2 negative feedback input. To connect low cut-off frequency of MIC2 amplifier setting capacitor.
12	MIC2 OUT	output	Microphone 2 output.
13	MIC2 VOLIN	Input	Microphone 2 volume input. To connect capacitor to reduce noise generated at time of volume change.
14	MICOUT	output	Microphone output. Mixing output of MIC 1 and MIC 2.
15	LPF1IN1	Input	Low pass filter 1 input 1. Pre-filter before A/D convertor for digital delay.
16	LPF1 IN2	Input	Low pass filter 1 input 2. Pre-filter before A/D convertor for digital delay.
17	LPF1 O U T •	output	Low pass filter 1 output. Pre-filter before A/D convertor for digital delay.
18	AD INTOUT	output	A/D integrator output. Composes D/A conversion integrator with external capacitor.
19	AD INTIN	Input	A/D integrator input. Composes D/A conversion integrator with external capacitor.
20	ADCONT	—	A/D control. To determine adaptive time constant of A/D convertor with ADM system.
21	REF	—	Reference power output. To connect 1/2 Vcc output and filter capacitor.
22	GND	—	Ground.
23	v c c	Input	Power supply.
24	DACONT	—	D/A control. To determine adaptive time constant of D/A convertor with ADM system
25	DAINTIN	Input	D/A Integrator input. Composes D/A conversion integrator with external capacitor.
26	DAINTOUT	output	D/A Integrator output. Composes D/A conversion integrator with external capacitor.
27	LPF2IN1	Input	Low pass filter 2 input 1. Post-filter after D/A convertor for digital delay.
28	LPF2IN2	Input	Low pass filter 2 input 2. Post-filter after D/A convertor for digital delay.
29	LPF2OUT	output	Low pass filfer 2 output. Post-filter after D/A convertor for digital delay.
30	VOLIN	Input	Echo effect/Echo feed back volume input. To connect capacitor to reduce noise generated at time of volume change.
31	L IN	Input	Lch line input.
32	R IN	Input	Rch line input.

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

ICK1 VHiM65856SP-1: Mic Amp. (M65856SP) (2/2)

Pin No.	Port Name	Input/Output	Function
33*	KEYCONIN	Input	Monaural input for external KEYCONTROL IC. Input/Output interface terminal for external KEYCONTROL IC.
34'	SOURCEOUT	output	Monaural input for external KEYCONTROL IC. Input/Output interface terminal for external KEYCONTROL IC.
3.6	R OUT	output	Rch mixing output.
36	L OUT	output	Lch mixing output.
37	VCF IL	—	Vocal cut filter. Processes frequencies lower then the vocal band.
38*	PS1	Input	Phase shift input 1. Determines a constant at time of phase shift.
39'	PS2	Input	Phase shift input 2. Determines a constant at time of phase shift.
40	LATCH	Input	Latch input via serial bus.
41 '	CLOCK	input	Clock input via serial bus.
42	DATA	input	Data input via serial bus.

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

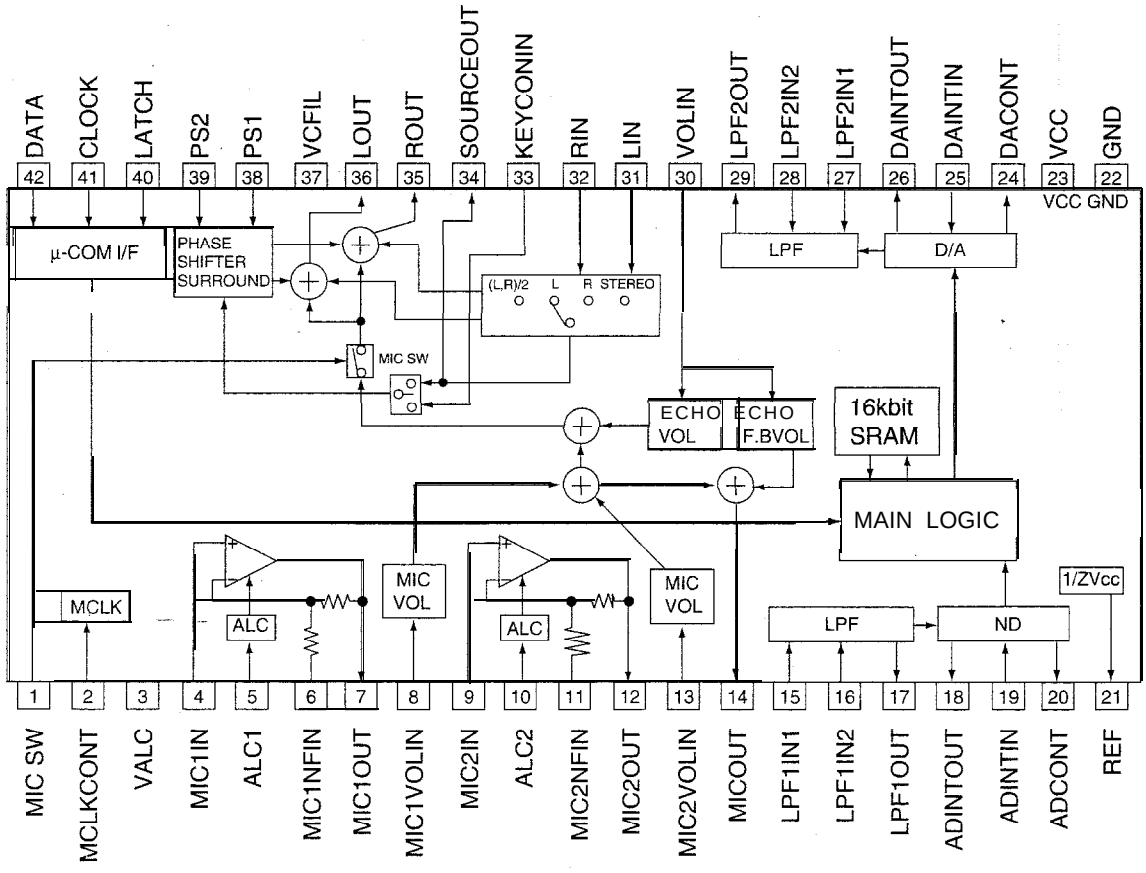
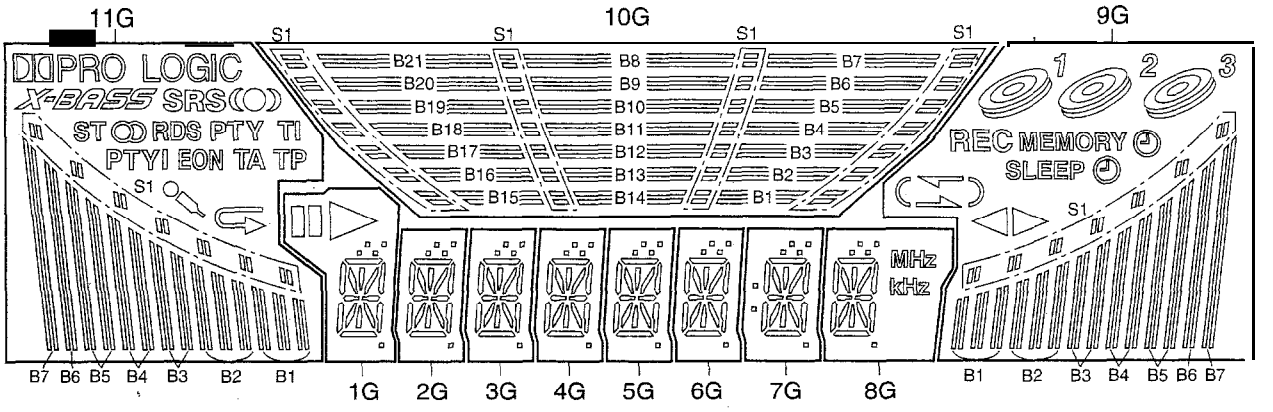
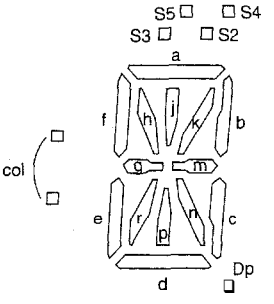


Figure 52 BLOCK DIAGRAM OF IC

FL DISPLAY

FL701 VVKBJ11LM02T1: FL Display





	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	S1	S1	S1	Dp	Dp	Dp	Dp	Dp	Dp	Dp	Dp
P2	B1	B1	B1	d	d	d	d	d	d	d	d
P3	B2	B2	B2	c	c	c	c	c	c	c	c
P4	B3	B3	B3	n	n	n	n	n	n	n	n
P5	B4	B4	B4	p	p	p	p	p	p	p	p
P6	B5	B5	B5	r	r	r	r	r	r	r	r
P7	B6	B6	B6	e	e	e	e	e	e	e	e
P8	B7	B7	B7	m	m	m	m	m	m	m	m
P9		B8	1	g	g	g	g	g	g	g	g
P10	X-BASS	B9	2		col						
P11		B10	3	b	b	b	b	b	b	b	b
P12	ST	B11	REC	k	k	k	k	k	k	k	k
P13	◎◎	B12	MEMORY	j	j	j	j	j	j	j	j
P14	RDS	B13	(Hiper)	h	h	h	h	h	h	h	h
P15	PTY	B14	(Lower)	f	f	f	f	f	f	f	f
P16	TI	B15	SLEEP	a	a	a	a	a	a	a	a
P17	TP	B16	(	S2	S2	S2	S2	S2	S2	S2	S2
P18	TA	B17	⇄	S3	S3	S3	S3	S3	S3	S3	S3
P19	PTY1	B18	)	S4	S4	S4	S4	S4	S4	S4	S4
P20	EON	B19	◁	S5	S5	S5	S5	S5	S5	S5	S5
P21		B20	▷	MHz							▷
P22		B21		kHz							▯▯

S H A R P

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